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ABSTRACT

Results of a World Health Organization survey concerning the use of learning objectives in medical and nursing education programs are presented, along with five case studies of educational programs. A total of 42 schools of nursing and 21 schools of medicine completed a questionnaire designed to elicit information concerning learning objectives. Each questionnaire item is presented, followed by a table in which all of the responses are presented. For each question, findings are discussed briefly, and some of the respondents' comments are reviewed. The following five case studies illustrate the use of learning objectives in educational programs in medical and nursing schools: Brandon General Hospital, School of Nursing, Manitoba, Canada; University of the Philippines Systems, College of Nursing; Padjadjaran University, School of Medicine, Java, Indonesia; University of Newcastle, Faculty of Medicine, New South Wales, Australia; and University Center of Health Sciences, Ben Gurion University of the Negev, Israel. Materials provided in the case studies include: a clinical experience record for nursing; a list of competencies expected of the nursing graduate; a list of skills, knowledge, and attitudes for two nursing courses; a list of process and content objectives for medical students; and learning objectives for specific medical school courses. (SW)

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nurses & physicians of tomorrow

A WORLD-WIDE SURVEY ON PROFESSIONAL ROLES AND THEIR USE AS A BASIS FOR EDUCATIONAL PROGRAMMES

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1984

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1

PURPOSE OF THE SURVEY

In May 1977, a resolution of the World Health Assembly(WHA30.43)[1] declared that "the main social target of governments and WHO in the coming decades should be the attainment by all the citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life". This concept, known since as "health for all", means a world free from avoidable suffering, disease, disability, and death for all people by the year 2000. During the 1978 International Conference on Primary Health Care, held in Alma-Ata, USSR, 152 Member States declared that health for all by the year 2000 was a main social target, and that primary health care is the key to attaining this target as a part of development in the spirit of social justice.

As no universal blueprint for a health system exists or ever will exist, each country must establish the most appropriate health system, taking into account different national circumstances and using as guidelines the principles of Alma Ata. The role of the medical and nursing professions will differ in each national health system. For example, in some countries, physicians provide health care at the first level of contact with the help of other members of the primary health care team. In other countries, which may not for some time to come be able to afford that kind of health care, or who find it otherwise inappropriate, primary care will be given by other categories of health personnel.

What is really important is that physicians and nurses should be suitably and appropriately trained to enable them to cope with local priority health problems at the first level of contact. However, physicians and nurses will have to accept in all countries the responsibility of being team-leaders and providing technical support and guidance, referral services and consultations, supervision in the form of continuing education, and the necessary management of primary health care teams at the first and intermediate levels of contact.

What is needed is a health system that is accessible to all members of the community and that is concerned with the promotion of health in the entire population. Physicians or nurses will be key members, or leaders, of a health team whose every member does what he/she has been trained for and who is oriented towards identifying and solving the priority health problems of the community. As members of the team, they may be responsible for the following important functions: planning, programming, organizing, implementing, and evaluating health activities; and training health personnel.

Professional profiles describing the role, functions, activities, and tasks of the medical and nursing professions will have to be worked out differently in each country. From these professional profiles, relevant educational (learning) objectives will be derived in order to guide learners and teachers during the formative years of basic education for both physicians and nurses.

The issue of relevance is of crucial importance.

In the early 1970's, during most meetings dealing with problems related to research in education for the health professions, the promotion of activities related to the development of educational objectives in nursing and in medicine was discussed. If it is true that a clear statement of learning objectives is necessary for a successful educational programme, it does not follow that a good programme automatically ensues from clear objectives. These objectives must be relevant to the priority health needs of society... and they must be reached. They are a means and not an end.

WHO's Sixth General Programme of Work stated that "Member States should, in collaboration with WHO, have developed learning objectives applicable to the basic training and continuing education of all categories of health personnel"[2]. It went

on to say that WHO would participate in the preparation of practical guidelines for the development of learning objectives based on task analysis and would promote the development of evaluation mechanisms to measure the degree of achievement of the educational objectives by the learners. The relevance of the objectives to the health needs and demands of the population would also be evaluated.

It also stated that WHO would participate "in the collection and dissemination of relevant data that may be needed for decision-making and for the preparation of training programmes".[3]

Sporadic efforts had already been made to develop an inventory of educational objectives. These efforts were based upon the fact that faculty members often want to know about educational objectives originating from schools other than their own. This happens often during workshops in education methodology. Although they are advised to prepare their OWN objectives in order to increase the relevance to their OWN situation, it seemed useful to help them in the formulation of objectives by giving concrete examples of educational objectives prepared elsewhere.

Working relationships and exchanges among educators can help them to determine if relevant programmes are comparable and have similar objectives. (If this occurs at present, it is possibly because educational programmes are copies of each other, but it is doubtful that they are relevant to the health needs of their society.)

It was useful during these workshops to assist faculty members to collect data for further research on the efficiency of educational programmes; on the value of independent learning based on behavioural objectives; or on the advantages and limitations of formulating student-oriented learning objectives.

An attempt to collect objectives from medical schools throughout the world was made in 1973. However, this was not entirely successful because quite a few of the objectives received were in languages other than English, and it became evident that such potentially useful data could not be used properly. These objectives unfortunately couldn't be used for the purposes of the survey because of this limitation.

The use of explicitely stated learning objectives could indicate innovation in curriculum planning and evaluation. This information could even be given in directories of schools of health sciences, e.g., the WHO World Directory of Medical Schools. This would be more useful than the usual paragraph about curriculum content ("___ years are devoted to anatomy, embryology, histology, physiology", etc.).

A methodology to formulate objectives that could be applied world-wide would be more useful. The WHO proposed programme and budget for health manpower development for the financial years 1976 and 1977 made provision for a meeting of a study group "to discuss criteria for the evaluation of learning objectives in the education of health personnel... (to) determine the advantages of defining such objectives, and the basis on which objectives should be established, and... define criteria for evaluating educational objectives. The outcome (of this meeting) will enable WHO to render assistance to Member States in setting up valid evaluation mechanisms".[4]

Such a meeting was held in December 1976, and reported in a WHO publication.[5] On that occasion it became evident that a minimum consensus was needed to define the concept of objective. There was no disagreement that an educational institution has an expressed reason for its existence, called its aim, purpose, or goal. In the case of a school for health workers, the main goal is to prepare individuals to perform certain health tasks in a specified setting in response to societal needs.

As the form of health practice may vary considerably from country to country, this should be reflected in the statement of the school's goals. The broad goal of an educational institution should be defined in terms of the role to be played by its graduates and the practices to be performed by them.

Educators have made it abundantly clear that such statements of goals leave much to be desired. They are usually quite vague. Miller and his associates called them "the broad, the all-inclusive, the inspiring statements to which it is not difficult to swear allegiance".[6] What today's educators are saying is that objectives should describe what the learner is to be like when he has successfully completed a learning experience.

In the report of the 1976 meeting, the following definition was given : "... an educational objective is taken to mean: a statement describing the expected results of learning experiences as they manifest

themselves in the performance or behaviour of the learner".[7] This could be applied at any level of expertise and for any type of work. These results may be qualified by appropriate modifiers that are defined in the objective itself.

An educational objective is also called a "learning objective". However, it is not infrequent to find in the literature statements that are referred to as "objectives", even if these are not learner-oriented. This is a source of confusion. Learning objectives should not specify what is to be learned or how it is to be learned (or, as it is sometimes phrased, what is to be taught or how it is to be taught), although this can be useful when selecting teaching/learning activities.

There are three levels of learning (educational) objectives: general, intermediate, and specific.[8] The general learning objectives are often called "institutional objectives" or better still, "general learning objectives at institutional level". They describe in general terms the competences a learner is expected to have at the end of an educational programme so as to perform the specified functions of his or her category of health worker and, in particular, to solve problems related to community health needs.

Intermediate objectives are derived from general objectives by breaking down professional functions into components (called professional activities)[9] which together indicate the nature of those functions.

Specific objectives are derived from intermediate objectives by breaking down professional activities into more precise professional tasks which can be observed and measured using given criteria (acceptable level of performance).

It appears that very few schools for health workers have prepared a formal statement of institutional objectives. Unfortunately, in the absence of a statement of educational objectives prepared at institutional level, the departments or other sectors of the institution are free to formulate their own objectives without knowing whether they will contribute to the achievement of the broader institutional objectives or whether the sum total of all educational efforts will "produce" the desired health worker. Even worse is the more familiar situation in which the school's departments, in the absence of institutional objectives, do not state the objectives for which they have a teaching responsibility, but instead simply plan their courses and provide learning experiences with only a vague purpose in mind. In such cases, it is the individual interests of the teachers in each department that usually determine which subject matter is to be emphasized.

This is one of the reasons why the International Council of Nurses, the World Federation for Medical Education, and the World Health Organization began a worldwide survey in 1978 to study the use of learning objectives in medical and nursing education.

The first phase of the study was to find out which schools have explicitly defined learning (educational) objectives formulated at the institutional level.

The second phase, limited to those schools identified by the survey as having formulated such learner-oriented objectives, was to find out what was the opinion of the school on: a) how effective learning objectives were in planning and implementing their training programmes and b) the quality of existing objectives according to the criteria for evaluating learning objectives set by a WHO Study Group.[10]

The third phase was to concentrate on a small number of interested institutions that have developed learning objectives, and to determine if, how and why they have been modified, how they have influenced curriculum development, teaching content, teaching and learning methods and, finally, how they have influenced the evaluation of students and, if possible, to find out if educational programmes using well-defined learning objectives are producing the kind of health personnel that is needed to contribute to the improvement of a country's health situation. The findings are the basis of this publication.

Everyone should be concerned that there is not enough quality control over the way potentially useful learning objectives are used. Health personnel education today is replete with examples of indiscriminate borrowings of educational objectives from inappropriate sources. This leads to curricula that are not relevant to community health needs. It is unfortunate that since only a very small number of institutions have made the effort to define learning objectives, their misuse may lead to more misunderstanding of this useful practice. The purpose of this study is to stimulate faculty members and health administrators to: 1) look more closely at the learning

objectives which have been or are about to be developed in their own institutions; 2) ensure that they are relevant to community health needs; and 3) determine how they can be effectively used for curriculum design and the performance assessment of their students.

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1 WHO Handbook of resolutions and decisions, Volume II, 4th ed., 1981, p.1.

2 WHO Official Records, No. 233, 1976, p.103.

3 Ibid., p.104.

4 WHO Official Records, No. 220, 1974, p.152.

5 WHO Technical Report Series, No. 608, 1977 (Criteria for the evaluation of learning objectives in the education of health personnel).

6 Miller, G. et al. Teaching and learning in medical school. Cambridge, MA, Harvard University Press, 1962, p.81.

7 WHO Technical Report Series, No. 608, p.6.

8 See definition of functions, activities, and tasks: Guilbert, J.J. Educational handbook for health personnel. Revised edition. Geneva, World Health Organization, 1981 (Offset Publication No. 35).

9 Ibid.

10 WHO Technical Report Series, No. 608, pp.11-21.

2

COMMENTS ON THE FINDINGS OF THE SURVEY

Medical and nursing educators have used objectives for as long as there has been medical and nursing education. However, it is only recently that objectives are being stated in medical and nursing education programmes. This can be explained quite easily.

As long as there has been a formal process of educating and training physicians and nurses, those individuals engaged in this process have had some idea about the "product" of their efforts. Any educational programme has an expected outcome. In the case of education for a profession, the outcome is the student who will assume the role of that professional. In the case of medical education, the "product" of the educational efforts is a practising physician; in nursing education, a practising nurse. Because medical educators and nursing educators think they know what practitioners are expected to do, and what students need to learn in order to be able to do those things, they believe that they are also capable of planning the educational programmes and of carrying out the assessment of the students' achievement. In those instances, the goals and objectives are "implicit".

However, medical and nursing students found that the implied goals and objectives of their educational programmes were (and are) inadequate to guide the development of a curriculum. Furthermore, in the absence of clearly stated objectives, students are handicapped in their learning processes because they do not know what is expected of them. Indeed, in many institutions, it appears to the student that the only desired learning outcome is to successfully pass the formal examination. Educators are at last, becoming aware of the need for, and the benefit of, explicit statements of objectives.

During the last two decades, as educators began to study the process of medical and nursing education,[1] and as they began to apply to those processes the ideas of educators such as Robert Mager,[2] forward-thinking medical and nursing educators recognized the necessity and benefit of having faculties define the objectives of educational programmes. Even here, the early efforts to define objectives were largely "teacher-centred". That is, even as educators stated educational objectives in terms of learner behaviour, those objectives mostly described what the student would be able to do as a result of teacher effort (e.g., "...as a benefit from the course in gross anatomy the student will be able to diagram and explain the brachial plexus..."). A more relevant learning objective, of course, is that which describes what the student will be able to do in his/her professional role (e.g., "...at the conclusion of the course in anatomy the student will be able to explain to a patient the anatomical features relevant to the patient's understanding of his condition..."). Having encouraged the faculties of medical and nursing schools to engage in the process of defining objectives, the World Health Organization became concerned that conscientious and truly well-meaning faculty members might produce lists of teacher-centred objectives, simply not realizing the crucial importance of having any statement of objectives always show a direct relationship with the professional tasks, activities, functions, or roles of the practitioner.

This document presents the results of a survey conducted by the World Health Organization, along with case studies illustrating the use of learning objectives in education programmes in medical and nursing schools. Before considering what is to be learned from these case studies, it might be important to review some basic principles of education as they apply to the use of educational objectives.

As long ago as 1961, Miller and his associates stated that the basis of educational objectives in medicine was determined essentially by three things: the

health needs of society, the professional characteristics of the physician, and the philosophy of the scientific method.[3] Considering the fact that this concept was stated more than 20 years ago, one must acknowledge its significant contribution despite its apparent simplicity. We understand that learning objectives must be directly related to the professional role, activities, and tasks of the practitioner; thus all three of these sources would be operative. Each of these elements deserves a further discussion.

(1) It must be obvious that the preparation of any health practitioner for his/her role in a given society or culture must be based on the health problems of that society or culture. Whatever the profession (e.g., physician, nurse, physical therapist, dietician), the practitioner will be expected to manage the prevalent problems of individuals and communities in that society or culture. The objectives of the school should, therefore, be determined by the health needs of that society or culture. However, professional schools of long standing in fully developed societies all too often operate by tradition, i.e., adding disciplines as they emerge - without regard for any of the sources of educational objectives or of the objectives themselves. Teaching often seems to be a ritual, and learning is by rote.

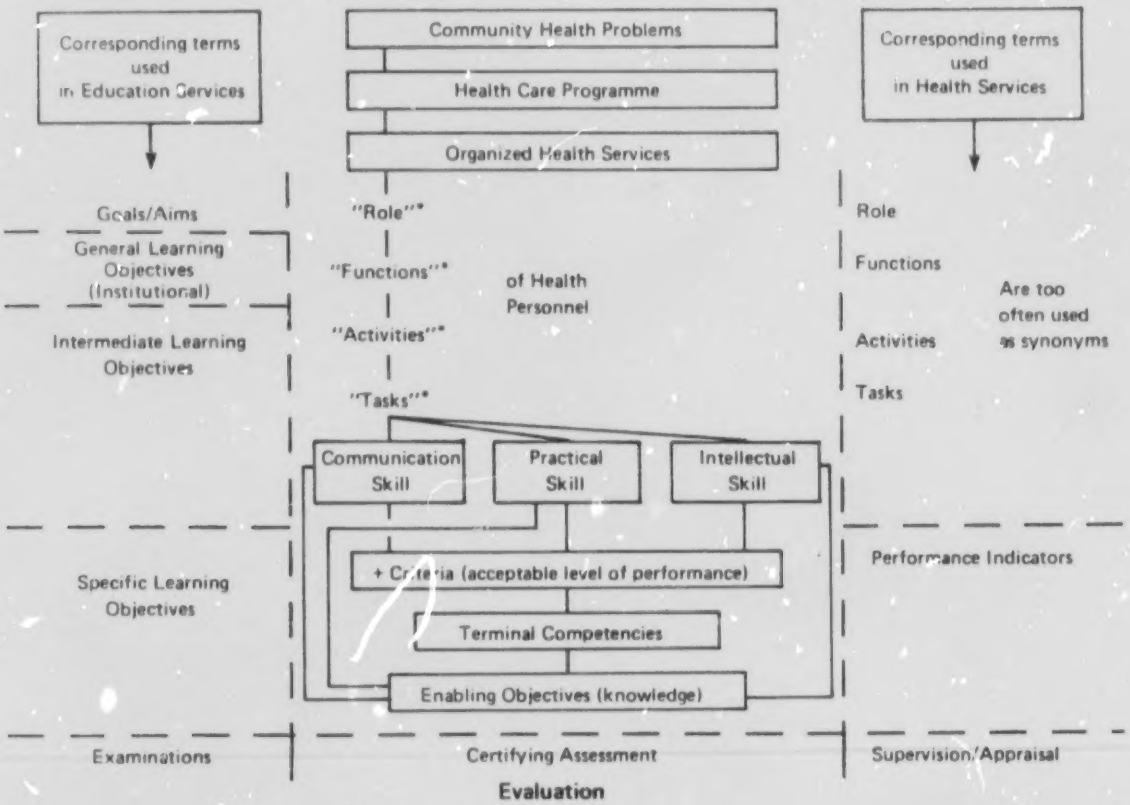
(2) In any given society there are many health professions and practitioners who deliver specified health services for the benefit of that society. These services, although sometimes overlapping, are unique and specific to each profession. Physicians (again, in each society) provide one set of services, nurses another. The characteristics and patterns of each health profession - its past practices, its present role(s), its future obligations - should have a significant influence upon the kind of educational objectives that are developed for the institutions responsible for the preparation of new practitioners of that profession.

(3) No matter what the health profession, much of the practice involves solving problems. Thus, the development of learning objectives (and certainly the subsequent planning of learning experiences and of assessment procedures) must be carried out keeping in mind the "scientific method" and methods of solving problems. (While it is not the intent of this document to discuss this in any detail, the authors cannot resist a gratuitous summary statement: the best way to learn how to solve a given type of problem is to solve problems of that type.)

STUDENTS OUGHT TO LEARN IN SCHOOL HOW TO BECOME THE ARCHITECTS OF THEIR OWN EDUCATION

E.W. EISNER

More recently, Guilbert has developed this theme further and has emphasized the need for ensuring relevance in educational planning:[4]



This diagram clearly shows the relationship between the various components. Of particular importance is the relationship between the levels of goals and objectives in the left column and the terms of reference in the right column. It should be quite obvious that the development of goals and objectives must reflect the roles, functions, activities, and tasks in order to maintain true relevance. If departments attempt to develop intermediate learning objectives in isolation (i.e., without regard for the projected tasks, activities, functions, and roles of the learner), the risk of non-relevant learning activities and equally non-relevant evaluation procedures is enormous. The cost to that society in terms of inappropriately trained health personnel is incalculable.

●

To say what one means by an objective is neither to reduce the importance of the objective nor its profundity . . . the act of writing it down means merely that what was once secret is now open for inspection and improvement.

R.F. Mager

The cost is great because if educational objectives are used, they influence the curriculum development, teaching methods, assessment procedures, and evaluation design. If the objectives are not relevant to either the health needs of society or to the role of the health practitioner and the tasks to be fulfilled by that health practitioner, then it is highly possible that: (1) the curriculum might waste institutional, faculty, and student resources; (2) the teaching methods might be inappropriate for that curriculum; (3) the assessment procedures might well measure achievement of the wrong skills (be they intellectual, practical, or communication); and/or (4) the evaluation might be based upon irrelevant criteria.

With more institutions expressing interest in educational objectives, these considerations become even more important. For some time, efforts had to be exerted simply to make teachers of health workers aware of the potential usefulness of stating objectives at all levels: general, intermediate, and specific. Now, with information about practices of developing, using, and revising educational objectives, it has become clear that there is an additional overwhelming concern: ensuring relevance of the objectives to the health needs of society and to the tasks of the practitioner.

The case studies in this document provide ample illustration of the ways in which educational objectives were developed and used. For institutions which still believe that defining educational objectives is largely a waste of time, these case studies should be read carefully. All schools offer illuminating illustrations of the way in which the presence of soundly developed and appropriately stated educational objectives facilitated the planning process. Moreover, in all of these case studies the evidence is incontrovertible: both faculty and students have the distinct advantage of knowing exactly what the student is required to learn. Medical students and nursing students are of such a calibre that they are capable of understanding the objectives and achieving them.

Another important lesson to be learned from reading the case studies is that it was not just the statement of objectives which made the significant contribution; it was the process by which the objectives were developed. "Borrowing" statements of objectives from other institutions, either for the sake of having them, or for actually applying them in another setting, may be worse than having no objectives at all. Unless these "borrowed" objectives are studied by both faculty and students and appropriately modified to reflect local health needs, they cannot possibly ensure that educational programmes will be relevant to the health needs of the population to be served by the graduates.

Some say that detailed statements of objectives limit the learning of students. Such "limits" will be present only to the extent that faculty members are disinterested in their students' learning more. In all of these case studies it is evident that students are encouraged to go beyond the acceptable criterion level, and they are rewarded for doing so. Statements of objectives serve as a guide and thus a reminder of minimum acceptable competence expected. Striving for excellence should be part of the ethos of a school, subscribed to by both faculty and students alike. It is not the statement of objectives which inhibits further learning; rather, it is the attitudes of faculty members.

Perhaps the most gratifying aspect of the use of educational objectives, and which is common to all these cases, is the reference to the health needs of the society served by the health professional school. Indeed, in the case of two of the schools (e.g., Newcastle and Ben Gurion) there is an extraordinary interrelationship between objectives, learning activities, tasks to be learned, role to be filled, and health needs to be met. One clearly grows from the next, and it is clear that such a blending fosters a most effective and efficient total programme. In these two case studies one finds the true model of the appropriate development and use of objectives.

In the other three case studies (Brandon, University of the Philippines, and Padjadjaran) that total blending of elements is not present. But the descriptive material clearly shows an institutional effort to achieve relevance through constant reference to health needs and to the expected roles of the graduate. The sequence of learning activities (curriculum and instruction, from a faculty point of view) is much more conventional and does not involve total commitment to community-oriented, problem-based learning activities as did those of Newcastle and Ben Gurion. And while their community-based, problem-

solving approach to learning activities might indeed be the most effective "curriculum", it is not within the province of this document to state that position, defend it, or even discuss curriculum and instruction. In the continuing absence of definitive research data, this paper maintains that there may be several disparate curriculum approaches and different patterns of learning activities to help students accomplish the objectives up to and beyond acceptable levels of competence. What is crucial in this document is the reiteration that, through the presentation of these case studies, the sound development and appropriate application of relevant objectives contribute significantly to an educational programme to prepare health professionals, regardless of the choice of learning activities.

At the risk of belabouring the point, it must be emphasized that, in common to all of these case studies, the three schools which had programmes of long standing (and periodic revision prior to their final definition and description of learning objectives) and the two which came into existence more recently (and used their definition and description of learning objectives as the basis of their new programmes), there is reference to the health needs of their respective societies, and the learning objectives are indeed stated as tasks or activities to be performed by the graduates when they become practitioners.

It should be noted in passing that a relationship between learning objectives for students and the profile of activities of the practising professional is far more difficult to achieve for established schools, particularly in the more developed societies which have an academic history and/or tradition dating back many years. Schools, like other social institutions, come to possess organizational characteristics which seem to have a life of their own. Patterns of behaviour become so "institutionalized" that faculty members consider it a form of blasphemy to question them. While it is difficult to conceive the major purpose of a medical or nursing school to be anything other than the preparation of physicians or nurses for the society in which the school exists, there are faculty members - in large numbers, in some instances - who apparently believe that the major efforts of a medical or nursing school should be to promote scholarship in the various disciplines which are taught in those schools. Frequently it is difficult to persuade faculty members even to examine the role of the school and of the profession in that society in an attempt to review the educational practices of the school. The power of tradition and the defence of the disciplines ("territoriality") almost preclude the possibility of thoughful and necessary institutional self-study and self-renewal. In schools of that kind, both the curriculum and the instructional practices appear to be "education by ritual".

Fortunately, in the schools reported in these case studies, practices have clearly illustrated the benefits of consultation with society, and with practising professionals, as well as with administrators, faculty, and students within the school. In all of these case studies, the outcomes have been salutary, and scholarship in the various disciplines has not been abandoned.

These case studies do show a range of "quality" in the development and use of learning objectives. In no instance, however, would a dispassionate reviewer call the efforts inadequate. Moreover, such a value judgment cannot be made in any case. The very process of working cooperatively to develop a set of guiding principles and detailed learning objectives truly and consistently related to the activities of the practitioner makes a significant contribution to the improvement of education - no matter what the form of the ultimate assessment. All of these institutions are to be congratulated for their efforts, and while such congratulations may be gratifying to the schools, it is probable that the rewards they have already reaped from their own efforts in this regard have proved to be more than ample reinforcement for their continued activities of this kind.

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[4]Guilbert, J.-J. Educational Handbook for Health Personnel. Geneva, 1981. p. 1.34.

3

DEVELOPMENT OF THE SURVEY

The survey has three distinct phases: the second was dependent upon the results of the first; and the third was similarly dependent upon the results of the second. The survey was conducted this way so that all schools of nursing and all schools of medicine would have the opportunity to participate in the survey and to share with each other their own experience using general learning objectives at the institutional level through the distribution of the report of the survey.

In order to obtain the widest possible participation and the optimum cooperation from schools of nursing and schools of medicine, WHO asked the International Council of Nurses (ICN) and the World Federation for Medical Education (WFME) to collaborate in the survey. Through the former, 337 nursing schools were identified for possible contact and became the "population" of nursing schools for phase one of the survey. Through the latter, 614 medical schools were similarly identified and became the "population" of medical schools for phase one.

In phase one, each medical and nursing school was sent a letter requesting that a copy of the institutional objectives established by the school be sent to WHO. Schools were also asked to indicate if they had no objectives.

When the data collection for phase one was completed, 142 schools of nursing had sent in their statements of institutional objectives, i.e., 42% of the total contacted. Of these, 84 (59%) were found to be acceptable, according to criteria for defining learning objectives that had been set beforehand by a WHO Study Group. These 84 schools (25% of all the schools originally contacted) then became the "population" for phase two. In the case of the medical schools, 164 (27%) responded, and 58 (35%) of those met the criteria, thus forming the "population" for phase two of the survey (10% of the schools originally contacted).

In phase two of the survey, the 84 schools of nursing and 58 schools of medicine were asked to respond to a rather detailed questionnaire designed to elicit information concerning their institutional objectives. The questions were based upon the criteria developed by the WHO Study Group[1]. Of the 84 schools of nursing, 42 (50%) responded; of the 58 schools of medicine, 21 (36%) responded. The complete report of the findings of phase two is given in this publication.

Possibly the most interesting part of the complete study was phase three, in which five schools of nursing (of the 42 which responded to phase two) and three schools of medicine (of the 21 respondents to phase two) were asked to submit case studies describing the development and utilization of their institutional learning objectives. Five case studies were selected to illustrate how learning objectives can be effective in the planning and implementation of educational programmes. They are presented in Section III.

Certain weaknesses in the design and conduct of the survey became apparent at once. In the first place, there can be no claim that the medical and nursing schools surveyed in any phase of the survey are a fair representation of all medical and nursing schools. Only 42% of the nursing schools and 27% of the medical schools contacted submitted statements of institutional objectives. Thus, even assuming that all the schools contacted are representative of all existing schools, no claim can be made that the 42% or 27% which responded represent their true populations.

This weakness is exacerbated by the low response rate to the questionnaire; 50% for schools of nursing and 36% for schools of medicine. Therefore, it is quite clear that the findings of the questionnaire cannot be considered conclusive, either for all schools of nursing or for all schools

of medicine. The case studies are individual, detailed reports from three medical and two nursing schools; they are presented here because they represent the "state of the art" (discovered through the survey) in the development and utilization of institutional learning objectives and not because they are representative of medical and nursing schools in general.

The second major weakness came from a possible lack of clarity of terms when collecting data. It became apparent to the investigators, as data were received and examined, that the respondents often misinterpreted the terms.

This is clearly a flaw in design. While the investigators believed they had given a clear definition of the key term, "learning objective", it became evident that more clarity - with some illustrations - was needed. Thus, it is possible that there are more nursing and medical schools using professional profiles and/or relevant learning objectives that should have been included in the survey. These schools are therefore welcome to send in case studies for possible inclusion in a follow-up document.

Had greater resources been made available for the conduct of the total study, the investigators would have been able to clarify some of those terms at each stage of the study by contacting non-respondents and/or those whose responses suggested that the instructions had not been clear to them. This might have improved significantly the response rate and the appropriateness of the data.

Finally, as with any such research effort, one becomes aware of other questions that could have been asked or alternative techniques that could have been used for the collection of data. Such criticisms can become the starting point for new, related research. As far as this study is concerned, the investigators believe that the original purpose has been served and that the effort was worthwhile. The reader, of course, can judge this for himself as he reviews the report of phase two which follows next.

An educational system will never achieve its full potential in the preparation of health professionals if it continues to guard jealously individual and departmental autonomy and to maintain a lofty aloofness from the health care system.

G.E. Miller 1977

[1] WHO Technical Report Series, No. 608, pp.11-21.

4

ANALYSIS OF THE DATA COLLECTED DURING THE SECOND PHASE OF THE SURVEY

ANALYSIS OF THE DATA COLLECTED DURING THE SECOND PHASE OF THE SURVEY

1. Purpose of the second phase

The second phase of the study intended to: (1) analyse the responses to the questionnaire, (2) identify problem areas, and (3) make recommendations concerning the methodology of phase II. It must be remembered that phase I of the study consisted of selecting those schools which seemed to describe adequately what the physician or nurse is able to do in his/her practice at the end of his/her training. (See the definition of educational objectives in WHO Technical Report Series, No. 608, 1977, page 24.)

1.1 Definition of the Working Sample

Three hundred and thirty-seven (337) nursing schools were contacted; 142 (42%) responded, sending in their institutional objectives; 84 (59%) of these had educational objectives according to the above-mentioned definition. Questionnaires were therefore sent to those 84 schools of nursing.[1]

Six hundred and fourteen (614) medical schools were contacted; 164 (27%) responded, sending in their institutional objectives; 58 (35%) of these had educational objectives according to the above-mentioned definition. Questionnaires were therefore sent to those 58 schools of medicine.

1.2 Questionnaire Responses

Table 1 shows the number of schools which received questionnaires, the number responding, the number of countries involved, and the language used by the respondents. Responses to most questions were indicated : YES, NO, or NO ANSWER.

Any comments or remarks made by the schools are given for each question. In each case, similar remarks were grouped together and the number of schools making such remarks was noted. Remarks from individual schools deemed of some possible interest are given, keeping as close as possible to the original text.

Table 1. Numbers of Questionnaires Sent and Received According to Type of School and Language

	Schools of Nursing	Schools of Medicine	
Questionnaires Sent	84	58	142
Questionnaires Returned	42*	21	63
Language	English = 34 Spanish = 6 French = 2	English = 17 Spanish = 3 French = 1	English = 51 Spanish = 9 French = 3

*Three (3) additional questionnaire responses were received after analysis of data was completed. They are not included in the data analysis, but careful examination showed them to be not significantly different from the pooled questionnaire responses included in the analysis.

2. Analysis of Data

In this section the data are given for all items of the questionnaire. The general format is as follows: (1) First, the question is shown as it appeared in the questionnaire. (2) This is followed by a table in which all of the responses

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1 Table 1-S on page 31 provides a more detailed breakdown of these data.

are presented. (3) For each question there is then a brief discussion pointing out some of the significant or otherwise interesting findings. (4) For each question some of the respondents' comments are reviewed.

The data are separated according to nursing schools and medical schools, the former coming first. The tables are numbered according to the number of the question and the type of school. For example, Table 5-M includes responses to Question 5 by schools of medicine, while Table 4-N presents responses to Question 4 by nursing schools.

2.1 Schools of Nursing

Questions 1N to 3N are concerned with persons involved in the construction of the objectives.

Question No. 1-N

When the objectives were developed, which of the following persons were involved in either developing or reviewing them:

(1) Teachers (if so, please state which discipline or profession)

(2) Practitioners (if so, please state which discipline or profession)

(3) Process experts (i.e., education specialists)

(4) Students

(5) Administrators (education, health, economy)

(6) Consumers' representatives (i.e., patients)

(7) Others (please specify)

Table 1-N. Numbers and Percentage of Persons Involved in Developing or Reviewing Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	40	95	21	50	10	24	15	36	27	64	4	10	2	5
No	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No Ans.	2	5	21	50	32	76	27	64	15	25	38	90	40	95
TOTAL	42	100	42	100	42	100	42	100	42	100	42	100	42	100

In practically all schools (40 of 42), teachers are involved in either developing or reviewing the objectives. In more than half of the schools, practitioners and administrators participated as well. Students were involved in 12 schools; process experts, in 10 schools. Only four schools indicated the participation of the consumers. Comments and written answers reveal that in most cases teachers of the following disciplines participated: nursing education, nursing administration, nursing practice. In many instances teachers in clinical sciences and public health were involved as well as those in social and biological sciences. In many cases

the representatives of nursing associations and other professional groups were invited to participate. The same was true for the representatives of ministries of health, social affairs, and of health agencies (or other central bodies); nursing services were represented by matrons, chief nurses, etc. Members of the practising medical profession participated in only very few cases.

One reason stated for the consumers' very limited participation was that there were some doubts about their expertise in nursing problems. In addition to students, some former graduates were invited to participate. Although it was not always clear from the data gathered, the educational specialists were most probably members of that institution's department of education.

Question No. 2-N

How was the final decision made concerning the adoption of the objectives:

(1) By me alone (if so, please explain why)

(2) By my administrative supervisor (if so, please explain why)

(3) By the chief institutional administrator (if so, please explain why)

(4) By an inter-departmental committee (if so, please explain why)

(5) Jointly (if so, please indicate who was involved)

(6) Other (please specify)

Table 2-N. Numbers and Percentages of Persons Making Final Decision Concerning Adoption of the Objectives

		N	%
(1)	By me alone	1	2
(2)	By my administrative supervisor	0	0
(3)	By the chief institutional administrator	1	2
(4)	By an inter-departmental committee	9	22
(5)	Jointly	25	60
(6)	Others	6	14
	TOTAL	42	100

Objectives were formulated jointly in more than one half of the schools. Comments and written answers show that decision-making usually involved various committees of the school, e.g., curriculum committee, school board, evaluation sub-committee, steering committee, or some combination of these (joint committee). The various participants listed under Question 2-N were members of these standing or ad-hoc bodies. In other instances the final decision was made by external bodies such as the board of a national nursing association; or by a joint committee of a university.

For the schools in the United States, mostly the total faculty was mentioned. Only exceptionally was the decision made by the chief administrator after consultation with various individuals or groups.

Question 3-N

Please explain what steps were taken to avoid objectives' being biased by:

(1) Special interest group pressures

(2) Narrow specialty interests

(3) Narrow disciplinary interests

(4) Others (please specify)

Table 3-N. Numbers and Percentages of Persons Responding

No. / Ans.	(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%
Yes	1	2	2	5	3	7	7	17
No	-	-	-	-	-	-	-	-
No Ans.	41	98	40	95	39	93	35	83
TOTAL	42	100	42	100	42	100	42	100

In the majority of cases the respondants felt that no powerful pressure groups could bias the formulation of objectives. That was the reason given why no special steps were taken.

Among the written answers there are many and various reasons indicated for the lack of any major biases, e.g., the mixture of teachers, administrators, and practitioners who formulate the objectives; inter-departmental discussion and consensus; involvement of multidisciplinary teams; participation of all interested groups; much sharing, debate, discussion, and compromise.

Questions 4N to 7N were asked in order to obtain data and information used as background and resources.

Question 4-N

Given that you accept that objectives should reflect the community's real health needs, which of the following are reflected:

(1) Present and future health problems

(2) Present and future functions of this category of health worker

(3) Functions of other health workers

(4) Expectations of health care consumers

(5) Expectations of health care workers

(6) Interrelationship between health needs and other needs of society

(7) Official government health policies

(8) Structure of the existing and future health care system

(9) Available data and research on health care and health manpower

(10) Current health manpower planning

(11) Other (please specify)

Table 4-N. Numbers and Percentages of Community Health Needs Reflected in Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	38	90	37	88	22	52	29	69	24	57	25	60	28	67	29	69	17	40	13	31	2	5
No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No Ans.	4	10	5	12	20	48	13	31	18	43	17	40	14	33	13	31	25	60	29	69	40	95
TOTAL	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100

The following are the community health needs reflected in the objectives of more than 60% of the schools:

- Present and future health problems: 38 schools
- Present and future functions of this category of health worker: 37 schools
- Expectations of health-care consumers: 29 schools
- Structure of existing and future health care systems: 29 schools
- Official government health policies: 28 schools
- Interrelationship between health needs and other needs of society: 25 schools

One school stated that a great deal of information was collected on all the factors mentioned in question No. 4. Another school said that the objectives do not reflect the community's real health needs.

Question 5-N

When the objectives were developed, which of the following factors were considered (please explain how in each case):

(1) Costs (with consideration to community resources)

(2) Characteristics of students

(3) Available teaching facilities

(4) Cultural setting of the educational institution

(5) Existing educational system(s) and philosophies

(6) Orientation of political and professional organizations

(7) Other (please specify)

Table 5-N. Numbers and Percentages of Factors Considered in Developing Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	15	36	34	81	30	71	24	57	36	86	16	38	2	5
No	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No Ans.	27	64	8	19	12	29	18	43	6	14	26	62	40	95
TOTAL	42	100	42	100	42	100	42	100	42	100	42	100	42	100

The following factors were considered when the objectives were developed:

(a) existing educational system(s) and philosophies (36 answers out of 42)

(b) characteristics of students (34)

(c) available teaching facilities (30)

(d) cultural setting of the educational institution (24)

(e) orientation of political and professional organizations (16)

(f) costs (15)

Remarks were made by respondents in 24 schools. They referred to:

- student characteristics (14 schools)
- orientation of political and professional organizations (6 schools)
- existing educational system(s) and philosophies (6 schools)
- cultural setting of the educational institution (5 schools)

Student characteristics taken into account included the educational background, results of psychological and academic tests, age, and physical fitness.

Question 6-N

Does each objective describe a specific competence that is significantly related to the performance of one or more of the tasks of that health worker? If so, give an example.

Table 6-N. Numbers and Percentages Responding Whether the Objectives Describe a Specific Competence

Answer	N	%
Yes	26	62
No	5	12
No Ans.	9	21
Some	2	5
	42	100

Twenty-six schools out of 42 indicated that each objective does describe a specific competence that is significantly related to the performance of one or more tasks. Only five answers said no. Twenty-one schools gave examples of such objectives. Five schools pointed out that the institutional objectives they had defined were "very broad statements" and did not therefore refer to a specific competence.

Question 7-N

Do the objectives represent an adequate sample of the expected professional abilities? If so, please indicate how the sample was derived.

Table 7-N. Numbers and Percentages of Respondents Who Indicate That Their Objectives Represent an Adequate Sample of Expected Professional Abilities

Answer	N	%
Yes	26	62
No	2	5
No Ans.	14	33
Total	42	100

Twenty-six schools said that their objectives represent an adequate sample of the expected professional abilities required in the practice of nursing. It must be noted that 14 schools did not respond to this question.

*

Questions 8N to 11N sought to obtain information concerning the characteristics of the objectives.

Question 8-N

Considering that educational objectives are by definition learner-oriented,

(1) Do they relate to the actual work the learner is going to do after qualification?

(2) Do they indicate what the graduate will be able to do (using a verb describing an action)?

(3) When an objective involves a knowledge process and uses a verb like "know" or "understand", does it also specify how the learner should demonstrate his knowledge or understanding?

(4) When an objective involves an attitudinal state and uses a verb like "feel" or "appreciate", does it also specify how the learner should demonstrate his feeling or appreciation?

Table 8-N. Numbers and Percentages of Responses to Question 8-N*

No. / Ans.	(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%
Yes	32	76	33	79	10	24	9	21
No	1	2	1	2	4	9	4	10
No Ans.	9	21	8	19	28	67	29	69
TOTAL	42	100	42	100	42	100	42	100

Thirty-two schools out of 42 considered that their objectives do relate to the actual work the learner is going to do after qualification. Thirty-three schools answered that the objectives do indicate what the graduate will be able to do, using a verb to describe the action. Ten and nine schools, respectively, pointed out that they do use verbs indicated under items 3 and 4.

Question No. 9-N

Considering that objectives should be consistent with one another:

(1) Do some objectives contradict others? (if so, please give an example)

(2) Do some objectives support others? (if so, please give an example)

*The numbers in parenthesis refer to the detailed questions listed below the main question.

Question 11-N

Considering that objectives should be directed towards significant results of learning in all areas (i. e., knowledge, skills, and attitudes):

(1) Are some of them specifically designed to facilitate personal attitudinal development?

(2) Are some of them specifically designed to facilitate the development of intellectual inquiry?

(3) Are some of them specifically designed to facilitate development of the "total person"?

(4) Are some of them specifically designed to promote the development of competence (and, where appropriate, leadership competence) for team work?

(5) Do some refer to development of skills in research methods?

(6) Do the objectives refer to the need for lifelong (continuous) self-instruction? If so, please give examples

(7) Do the objectives refer to the need for lifelong (continuous) self-assessment? If so, please give examples

(8) Do the objectives reflect the scientific basis for problem-solving needed by that category of health worker?

(9) Do the objectives reflect adequately the range of skills demanded at present by that category of health worker?

(10) Do some objectives reflect the importance of the health worker's responsibility to society? If so, please give examples.

(11) Do some objectives recognize the need to prepare the health worker to be responsive to new types of practice? If so, please give examples.

Table 11-N. Numbers and Percentages of Responses Concerning Direction of Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	34	81	35	83	30	71	39	93	21	50	31	74	22	52	34	81	31	74	35	83	24	57
No	3	7	3	7	5	12	-	-	10	24	2	5	5	12	2	5	3	7	1	2	5	12
No Ans	5	12	4	10	7	17	3	7	11	26	9	21	15	36	6	14	8	19	6	15	13	31
TOTAL	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100	42	100

Thirty-nine schools judged that some objectives promote the development of competencies (4); 35 schools considered that some objectives reflect the future health-worker's responsibility (10); 34 thought that some objectives do facilitate personal attitudinal development (1); 35, facilitate the development of intellectual

Table 9-N. Numbers and Percentages of Schools Reporting that Objectives Contradict or Support Each Other

No. / Ans	(1)		(2)	
	N	%	N	%
Yes	-	-	34	81
No	24	57	2	5
No Ans.	18	43	6	14
TOTAL	42	100	42	100

None of the 42 schools admitted having objectives that contradict others. Instead, 34 schools said they have some objectives which support others.

Question 10-N

Are the objectives realistic with regard to:

(1) Characteristics of students

(2) Characteristics of teachers

(3) Facilities available

(4) Time available for learning

(5) Other (please specify)

Table 10-N. Numbers and Percentages of Responses Concerning Whether Objectives are Realistic

No. / Ans.	(1)		(2)		(3)		(4)		(5)	
	N	%	N	%	N	%	N	%	N	%
Yes	35	83	33	79	34	81	34	81	7	17
No	-	-	-	-	-	-	1	2	-	-
No Ans.	7	17	9	21	8	19	7	17	35	83
TOTAL	42	100	42	100	42	100	42	100	42	100

Thirty-five schools out of 42 replied that the objectives are realistic with regard to characteristics of students (1) while 34 said they were realistic with regard to the time available for learning (4). Thirty-three schools thought that the objectives were realistic with regard to characteristics of teachers; 34, with regard to facilities available.

inquiry (2); 34, reflect a scientific base for problem-solving (8); 31, refer to the need for lifelong self-learning (6); 30, facilitate development of the "total person" (3); 31, reflect adequately the range of skills (9); and 25, prepare the health worker to be responsive to new types of practice (11). Altogether, 24 examples were given as requested.*

The next four questions (12N to 15N) sought answers concerning the intended use of the objectives.

Question 12-N

Has consideration been given to what use the objectives will be put in your institute? If so, please indicate what plans were made.

Table 12-N. Numbers and Percentages of Responses Indicating Future Use of Objectives

Answer	N	%
Yes	32	76
No	0	0
No Ans.	10	24
TOTAL	42	100

Thirty-two schools out of the 42 stated that consideration had been given to what use the objectives will be put in their institute. There were many and various areas where and how the objectives are planned to be used, such as: direction to the teachers and to the students; identifying teaching/learning experiences and methods; evaluation and assessment of the students and the programme; a basis for curriculum development and its modification; advising the community; evaluation of graduates after six months in a work situation; development of criteria for assessing fulfilment of the school's goals; and information for prospective students.

Question 13-N

If consideration has been given to what use the objectives will be put, how was the final decision made concerning the use of the objectives?

(1) By me alone (if so, please explain why)

(2) By my administrative supervisor (if so, explain why)

(3) By the chief institutional administrator (if so, explain why)

(4) By an inter-departmental committee (if so, explain why)

(5) Jointly (if so, please indicate who was involved)

(6) Other (please specify)

*The numbers in parenthesis refer to the detailed questions below the main question.

Table 13-N. Numbers and Percentages of Responses to How Final Decision Was Made

	N	%
(1) by me alone	0	0
(2) by my administrative supervisors	0	0
(3) by the Chief institutional administrator	2	5
(4) by an inter-departmental committee	6	14
(5) jointly	28	67
(6) other	0	0
No. Ans.	6	14
TOTAL	42	100

The final decision concerning the use to be made of objectives was made jointly in the majority of schools (28). In six of the schools the decision was made by an inter-departmental committee. The major reason for such decision-making was to ensure as far as possible a large and multi-disciplinary participation. In two schools, the decision was left to the chief institutional administrator.

Question 14-N

Are the students informed about the objectives?

(1) Students were given copies of the objectives.

(2) Students have discussed them (if so, under what circumstances?).

(3) Students have not seen them (if not, why not?).

(4) Some of the students have probably seen them (if so, why only "some" of the students?).

Table 14-N. Numbers and Percentages of Responses Stating Whether Students are Informed About Objectives

No. / Ans.	(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%
Yes	34	81	29	69	1	2	0	0
No	0	0	1	2	1	2	0	0
No Ans.	8	19	12	29	40	96	42	100
TOTAL	42	100	42	100	42	100	42	100

Thirty-four schools out of the 42 stated that the students were given copies of the objectives; 29 schools confirmed that the students had discussed them.

Question 15-N

Are teachers informed about the objectives?

(1) All teachers were given copies of the objectives.

(2) Teachers have discussed them (if so, under what circumstances?).

(3) Teachers have not seem them (if not, why not?).

(4) Some of the teachers have probably seen them (if so, why only "some" of the teachers?).

Table 15-N. Numbers and Percentages of Responses Stating Whether Teachers Are Informed about Objectives

No. / Ans.	(1)		(2)		(3)		(3)	
	N	%	N	%	N	%	N	%
Yes	36	86	31	74	-	-	-	-
No	-	-	-	-	-	-	-	-
No Ans.	6	14	11	26	42	100	42	100
TOTAL	42	100	42	100	42	100	42	100

Thirty-six schools said that all teachers were given copies of the objectives and 31 schools said the objectives were discussed by the teachers.

Questions 16N and 17N explored the usefulness of the objectives.

Question 16-N

As you examine the set of objectives, what do you believe <u>will</u> come of their existence?

(1) They will be achieved.

(2) They will facilitate student learning.

(3) They will facilitate an integrated approach to learning.

(4) They will facilitate a problem-based approach to learning.

(5) They will facilitate evaluation.

(6) Other (please specify).

(7) They may not even be used.

Table 16-N. Numbers and Percentages of Responses Concerning Belief About Future Outcomes

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	28	67	35	83	27	64	24	57	34	81	21	50	0	0
No	-	-	-	-	-	-	-	-	-	-	-	-	1	2
No Ans.	14	33	7	17	15	36	18	43	8	19	21	50	41	98
TOTAL	42	100	42	100	42	100	42	100	42	100	42	100	42	100

Thirty-five schools believe the objectives will facilitate student learning and 34 of them believe they will facilitate evaluation. Other choices received a smaller number of positive answers:

- only 28 schools believe the objectives will be achieved
- twenty-seven schools believe they will facilitate an integrated approach to learning
- twenty-four schools believe they will facilitate a problem-based approach to learning

Question 17-N

Has the existence of the objectives had any impact on the following aspects of the educational programme?

(1) Teaching/learning activities (if so, please give examples)

(2) Evaluation methods (if so, please give examples)

(3) Other (please specify)

Table 17-N. Numbers and Percentages of Respondents Indicating Impact of Objectives.

No. / Ans.	(1)		(2)		(3)	
	N	%	N	%	N	%
Yes	29	69	23	55	3	7
No	-	-	-	-	-	-
No Ans.	13	31	19	45	39	93
Total	42	100	42	100	42	100

Fewer schools answered this question. Twenty-nine of them say that the objectives will have an impact on the teaching/learning activities and 23 schools say they will influence the evaluation methods.

Twenty-nine schools stated that the existence of the objectives had an impact on teaching/learning activities; 23 schools indicated an impact on evaluation methods.

With regard to impact on teaching/learning activities, the following aspects were mentioned: increased emphasis on problem-solving skills; selection of content, experiences and evaluation; improvement of practical experience; introduction of simulation techniques; an approach for "patient care"; development of new activities in clinical care; introduction and improvement of surveillance of patients; more correct sequence in the programme; promotion of cooperation of teachers; certain new openings to community care; and independent study.

The remaining three questions (18N to 20N) concerned the evaluation and revision of the objectives.

Question 18-N

Are there provisions for a periodic review of the objectives?
If so, what is the review based on?

(1) Student's performance data

(2) Operational research data

(3) Evidence of changing needs

(4) Other (please specify)

Table 18-N. Numbers and Percentages of Responses Concerning Review of the Objectives

No.	Review?		(1)		(2)		(3)		(4)	
Ans.	N	%	N	%	N	%	N	%	N	%
Yes	36	85	26	62	13	31	30	71	1	2
No	2	5	-	-	-	-	-	-	-	-
No Ans.	4	10	16	38	29	69	12	29	41	98
Total	42	100	42	100	42	100	42	100	42	100

Thirty-six schools responded that a revision of objectives is carried on. Twenty-six say they do this on the basis of student performance data and 30 schools take into account evidence of changing needs when revising their objectives. Only 13 schools plan revision on the basis of operational research.

Question 19-N

If there is a periodic review of the objectives, who is involved in the review?

(1) Teachers

(2) Practitioners

(3) Process experts (i.e., education specialists)

(4) Students

(5) Administrators

(6) Consumers (i.e., patients)

(7) Others (please specify)

Table 19-N. Numbers and Percentages of Schools Stating Who is Involved in Review of Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	38	90	21	50	15	36	26	62	27	64	6	14	4	10
No	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No. Ans.	4	10	21	50	27	64	16	38	15	36	36	86	38	90
Total	42	100	42	100	42	100	42	100	42	100	42	100	42	100

Teachers were mainly involved in the review of the objectives (38 schools). Others involved were administrators (27 schools), students (26 schools), and nurse practitioners (21 schools). Few schools involved process experts (15 schools) and only six schools involved the consumers of nursing care.

Question 20-N

In the review of objectives:

(1) Does such a review facilitate curriculum modification?

(2) By what means? (Please specify)

Table 20-N. Numbers and Percentages of Respondents Indicating Review Facilitates Curriculum Modification

No. / Ans.	(1)		(2)	
	N	%	N	%
Yes	30	72	23	55
No	1	2	-	-
No Ans.	11	26	19	45
Total	42	100	42	100

Thirty schools said that the review of the objectives facilitates curriculum modification. It must be noted that 11 schools did not respond to this question and one school said no.

*

All the data reported in this section concern nursing education. While there is some doubt as to the extent to which one may generalize the situation in all nursing schools, based only on the data received, there is no problem in drawing conclusions about the nursing schools which have responded.

*

Even though the responses varied considerably in the small number of respondents and there were a substantial number of questions unanswered, the replies did provide enough data to reveal obvious trends. The case studies, however, provide more important and specific information.

2.2 Medical Schools

The data which follow were collected from 21 medical schools. The questions were the same as those asked of the nursing schools. The first three questions elicited information concerning persons involved in the construction of the objectives.

Question 1-M

When the objectives were developed, which of the following persons were involved in either developing or reviewing them:

(1) Teachers (if so, please state which discipline or profession)

(2) Practitioners (if so, please state which discipline or profession)

(3) Process experts (i.e., education specialists)

(4) Students

(5) Administrators (education, health, economy)

(6) Consumers' representatives (i.e., patients)

(7) Others (please specify)

Table 1-M. Numbers and Percentages of Persons Involved in Developing or Reviewing Objectives*

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	20	95	10	48	11	52	11	52	10	48	2	10	-	-
No	0	-	1	5	-	-	-	-	-	-	-	-	-	-
No Ans.	1	5	10	48	10	48	10	48	11	52	19	90	21	100
Total	21	100	21	100	21	100	21	100	21	100	21	100	21	100

In 21 schools, teachers were involved in either developing or reviewing the objectives. In half of the schools (11) process experts participated, and administrators participated in ten schools. Practitioners were involved in almost one half of the schools (10). The same was true for participation of students (11). Only in two schools were consumers invited to take part.

Question 2-M

How was the final decision made concerning the adoption of the objectives?

(1) By me alone (if so, please explain why)

(2) By my administrative supervisor (if so, please explain why)

(3) By the chief institutional administrator (if so, please explain why)

(4) By an inter-departmental committee (if so, please explain why)

(5) Jointly (if so, please indicate who was involved)

(6) Other (please specify)

Table 2-M. Numbers and Percentages of Persons Making Final Decision Concerning Adoption of the Objectives

	N	%
(1) By me alone	1	5
(2) By my administrative supervisor	-	-
(3) By the chief institutional administrator	-	-
(4) By an inter-departmental committee	4	19
(5) Jointly	16	76
(6) Other	-	-
	21	100

* The number in parenthesis refer to the detailed questions listed below the main question.

In most schools the final decision concerning the adoption of the objectives is made jointly (16 schools). In four schools the decision is made by an inter-departmental committee and, in one school, by the person who answered the questionnaire.

Question 3-M

Please explain what steps were taken to avoid objectives being biased by:

(1) Special interest group pressures

(2) Narrow specialty interests

(3) Narrow disciplinary interests

(4) Others (please specify)

Table 3-M. Numbers and Percentages of Persons Responding

No. / Ans.	(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%
Yes	1	5	3	14	4	19	2	10
No Ans.	20	95	18	86	17	81	19	90
Total	21	100	21	100	21	100	21	100

It seems that almost no special steps were considered necessary to avoid any biases. In their comments the schools indicated various reasons preventing any major bias, such as: broadly based committee; various sub-committees and plenary sessions; three levels of decision-making process; full participation of faculty; the presence of a faculty educational bureau; interdisciplinary quality of the group; "spiral structure" of the curriculum and close contact with real practice; formal and informal meetings of teachers; collection of information and views from various sources; and broad consistency of professional disciplines and classes.

One school mentions the importance of integrating medicine and nursing, thereby ensuring all aspects of medical science.

The next four questions (4-M through 7-M) covered data and information used as background and resources.

Question 4-M

Given that you accept that objectives should reflect the community's real health needs, which of the following are reflected?

(1) Present and future health problems

(2) Present and future functions of this category of health worker

(3) Functions of other health workers

(4) Expectations of health care consumers

(5) Expectations of health care workers

(6) Interrelationship between health needs and other needs of society

(7) Official government health policies

(8) Structure of the existing and future health care system

(9) Available data and research on health care and health manpower

(10) Current health manpower planning

(11) Other (please specify)

Table 4-M. Numbers and Percentages of Community Health Needs Reflected in Objectives.

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	19	90	17	81	11	52	12	57	8	38	14	67	11	52	16	76	11	52	10	48	1	5
No	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No Ans.	2	10	4	19	10	48	9	43	13	62	7	33	10	48	5	24	10	48	11	52	20	95
Total	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100

Respondents reported that in order for the objectives to reflect the community's real health needs, consideration was given to the following (arranged in order of decreasing frequency of response): present and future health problems (19 out of 21 schools); present and future functions of this category of health worker (17); structure of the existing and future health care system (16); interrelationship between health needs and other needs of society (14); expectations of health care consumers (12); functions of other health workers (11); and available data and research on health care and health manpower (11). Other responses included official government health policy (11); current health manpower planning (10); and expectations of health care workers (8). It is worthwhile to mention that one school pointed out, under (11) "Other", that full and effective integration between the university and the health services is needed and that this should be reflected in the teaching programme.

Question 5-M

When the objectives were developed, which of the following factors were considered? (please explain how in each case)

(1) Costs (with consideration to community resources)

(2) Characteristics of students

(3) Available teaching facilities

(4) Cultural setting of the educational institution

(5) Existing educational system(s) and philosophies

(6) Orientation of political and professional organizations

(7) Other (please specify)

Table 5-M. Numbers and Percentages of Factors Considered in Developing Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	10	48	9	43	12	47	13	63	15	71	6	29	4	19
No	-	-	1	5	1	5	-	-	-	-	-	-	-	-
No Ans.	11	52	11	52	8	38	8	38	6	29	15	71	17	81
Total	21	100	21	100	21	100	21	100	21	100	21	100	21	100

Respondents reported consideration of the following factors when the objectives were developed: existing educational systems(s) and philosophies (15); cultural setting of the educational institution (13); available teaching facilities (12); costs (10); characteristics of students (9); and orientation of political and professional organization (6). One interesting statement was made under (7) "Other": health profile of the population.

Question 6-M

Does each objective describe a specific competence that is significantly related to the performance of one or more of the tasks of that health worker? If so, give an example.

Table 6-M. Numbers and Percentages Responding Whether the Objective Describes a Specific Competence

Answer	N	%
Yes	13	62
No	3	14
No Ans.	5	24
Total	21	100

Thirteen schools out of 21 considered that each objective does describe a specific competence that is significantly related to the performance of one or more tasks. Three answers were "No". Five schools gave relevant examples and three, not relevant ones. In commenting, four schools made the point that their objectives are in very broad areas; one school pointed out that the relationship with highly specific objectives was obscure.

Question 7-M

Do the objectives represent an adequate sample of the expected professional abilities?

If so, please indicate how the sample was derived.

Table 7-M. Numbers and Percentages of Respondents Who Indicate That Their Objectives Represent an Adequate Sample of Expected Professional Abilities

Answer	N	%
Yes	14	67
No	1	5
No Ans.	6	28
Total	21	100

Fourteen schools considered that their objectives represent an adequate sample of the expected professional abilities. In comments, six schools stated clearly that the basis for this sample was the results of studies (questionnaires, task analysis, incidence of disease and problems). One school pointed out that the experience of their own teachers in private practice was the basis. Another school said the sample was based on the faculty's expectations of beginning graduates.

Characteristics of the objectives was the focus of the next four questions (8-M through 11-M).

Question 8-M

Considering that educational objectives are by definition learner-oriented:

(1) Do they relate to the actual work the learner is going to do after qualification?

(2) Do they indicate what the graduate will be able to do (using a verb describing an action)?

(3) When an objective involves a knowledge process and uses a verb like "know" or "understand", does it also specify how the learner should demonstrate his knowledge or understanding?

(4) When an objective involves an attitudinal state and uses a verb like "feel" or "appreciate", does it also specify how the learner should demonstrate his feeling or appreciation?

Table 8-M. Numbers and Percentages of Responses to Question 8-M

No. / Ans.	(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%
Yes	13	62	16	76	9	43	7	33
No	-	-	-	-	3	14	4	19
No Ans.	8	38	5	24	9	43	10	48
Total	21	100	21	100	21	100	21	100

Sixteen schools stated that their objectives do indicate what the graduate will be able to do (using a verb describing an action). Only 13 schools answered that their objectives relate to the actual work the learner is going to do after qualification. Nine schools said that when an objective involves a knowledge process it also specifies how the learner should demonstrate his knowledge. Seven schools stated that when an objective involves an attitudinal state it also specifies how the learner should demonstrate his feeling. Three schools even gave examples of their attitudinal objectives.

Question 9-M

Considering that objectives should be consistent with one another,

(1) Do some objectives contradict others? (if so, please give an example)

(2) Do some objectives support others? (if so, please give an example)

Table 9-M. Numbers and Percentages of Schools Reporting that Objectives Contradict or Support Each Other

No. / Ans.	(1)		(2)	
	N	%	N	%
Yes	2	10	19	90
No	9	43	-	-
No Ans.	10	48	2	10
Total	21	100	21	100

Two schools stated that some of their objectives contradict others and nine schools stated that none of their objectives contradict each other. Most schools (19) said the objectives support each other. It must be noted, however, that about half the schools responding did not answer the sub-question (1).

One school pointed out that they review the objectives at regular meetings with the aim of making them more consistent. One school pointed out that when they set the objectives for the latter years of the programme, they base them on the objectives of previous years.

Question 10-M

Are the objectives realistic with regard to:

(1) Characteristics of students

(2) Characteristics of teachers

(3) Facilities available

(4) Time available for learning

(5) Other (please specify)

Table 10-M. Numbers and Percentages of Responses Concerning Whether Objectives are Realistic

No. / Ans.	(1)		(2)		(3)		(4)		(5)	
	N	%	N	%	N	%	N	%	N	%
Yes	13	62	13	62	14	67	16	76	4	19
No	1	5	-	-	-	-	-	-	-	-
No Ans.	7	33	8	38	7	33	5	24	17	81
Total	21	100	21	100	21	100	21	100	21	100

Sixteen schools replied that the objectives are realistic with regard to the time available for learning. Thirteen schools replied that the objectives are realistic regarding characteristics of students, regarding facilities available (14 schools); and characteristics of teachers (13 schools).

Question 11-M

Considering that objectives should be directed towards significant results of learning in all areas (i.e., knowledge, skills, and attitudes):

(1) Are some of them specifically designed to facilitate personal attitudinal development?

(2) Are some of them specifically designed to facilitate the development of intellectual inquiry?

(3) Are some of them specifically designed to facilitate development of the "total person"?

(4) Are some of them specifically designed to promote the development of competence (and, where appropriate, leadership competence) for team work?

(5) Do some refer to development of skills in research methods?

(6) Do the objectives refer to the need for lifelong (continuous) self-instruction? If so, please give examples.

(7) Do the objectives refer to the need for lifelong (continuous) self-assessment? If so, please give examples.

(8) Do the objectives reflect the scientific basis for problem-solving needed by that category of health worker?

(9) Do the objectives reflect adequately the range of skills demanded at present by that category of health worker?

(10) Do some objectives reflect the importance of the health worker's responsibility to society? If so, please give examples.

(11) Do some objectives recognize the need to prepare the health worker to be responsive to new types of practice? If so please give examples.

Table 11-M. Numbers and Percentages of Responses Concerning Direction of Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)		(11)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	20	95	19	90	14	67	19	90	15	72	18	86	12	57	19	90	16	76	18	86	12	57
No	-	-	1	5	2	9	-	-	2	9	1	5	3	14	-	-	1	5	1	5	1	5
No Ans.	-	-	-	-	4	19	1	5	3	14	2	9	6	29	2	10	4	19	2	9	8	38
Few	1	5	1	5	1	5	1	5	1	5	-	-	-	-	-	-	-	-	-	-	-	-
Total	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100	21	100

Twenty schools out of 21 considered that some objectives are specifically designed to facilitate personal attitudinal development; 19 schools, to facilitate the development of intellectual inquiry; and 19, to promote the development of competence. Nineteen schools responded that objectives are designed to reflect the scientific basis for problem-solving; eighteen schools report that objectives refer to the need for lifelong self-instruction; and 18 schools state that objectives reflect the importance of the health worker's responsibility to society.

The next four questions (12M through 15M) deal with the topic of intended use of the objectives.

Question 12-M

Has consideration been given to what use the objectives will be put in your institute? If so, please indicate what plans were made.

Table 12-M. Numbers and Percentages of Responses Indicating Future Use of Objectives

Answer	N	%
Yes	14	67
No	-	-
No Ans.	7	33
Total	21	100

Fourteen schools have given consideration to what use the objectives will be put and seven schools (one-third of schools responding) did not answer this question.

Question 13-M

If consideration has been given to what use the objectives will be put, how was the final decision made concerning the use of the objectives?

(1) By me alone (if so, please explain why)

(2) By my administrative supervisor (if so, explain why)

(3) By the chief institutional administrator (if so, explain why)

(4) By an inter-departmental committee (if so, explain why)

(5) Jointly (if so, please indicate who was involved)

(6) Other (please specify)

Table 13-M. Numbers and Percentages of Responses to How Final Decision Was Made

	N	%
(1) By me alone	-	-
(2) By my administrative supervisor	-	-
(3) By the chief institutional administrator	1	5
(4) By an interdepartmental committee	6	28
(5) Jointly	10	48
(6) Other	1	5
No Answer	3	14
Total	21	100

The final decision concerning the use of objectives was done jointly in ten schools, and in six schools by an inter-departmental committee. One school stated that the final decision was made by the chief institutional administrator.

Question 14-M

Are students informed about the objectives?

(1) Students were given copies of the objectives.

(2) Students have discussed them (if so, under what circumstances?).

(3) Students have not seem them (if not, why not?).

(4) Some of the students have probably seen them (if so, why only "some" of the students?).

Table 14-M. Numbers and Percentages of Responses Stating Whether Students are Informed about Objectives

No. / Ans.	(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%
Yes	17	81	8	38	1	5	2	10
No	-	-	-	-	1	5	1	5
No Ans.	4	19	13	62	19	90	18	85
Total	21	100	21	100	21	100	21	100

Seventeen schools stated that students were given copies of the objectives, but only eight schools said the students had discussed the objectives. One school stated that the students had not seen them and two schools said that only some of the students had seen the objectives.

Question 15-M

Are teachers informed about the objectives?

(1) All teachers were given copies of the objectives.

(2) Teachers have discussed them (if so, under what circumstances?).

(3) Teachers have not seen them (if not, why not?).

(4) Some of the teachers have probably seen them (if so, why only "some" of the teachers?).

Table 15-M. Numbers and Percentages of Responses Stating Whether Teachers are Informed About Objectives.

No. / Ans.	(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%
Yes	12	57	11	52	-	-	3	14
No	-	-	-	-	1	5	1	5
No Ans.	9	43	10	48	20	95	17	81
Total	21	100	21	100	21	100	21	100

Twelve schools stated that all teachers were given a copy of the objectives; eleven schools indicated that teachers had discussed the objectives. Three said that only "some of the teachers had probably seen them".

Questions 16M and 17M explored the usefulness of objectives.

Question 16-M

As you examine the objectives, what do you belive will come of their existence?

(1) They be achieved.

(2) They will facilitate student learning.

(3) They will facilitate an integrated approach to learning.

(4) They will facilitate a problem-based approach to learning.

(5) They will facilitate evaluation.

(6) Other (please specify).

(7) They may not even be used.

Table 16-M. Numbers and Percentages of Responses Concerning Belief About Future Outcomes

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	11	52	17	81	13	62	14	67	17	81	1	5	-	-
No	-	-	-	-	-	-	-	-	-	-	-	-	1	5
No Ans.	10	48	4	19	8	38	7	33	4	19	20	95	20	95
Total	21	100	21	100	21	100	21	100	21	100	21	100	21	100

In descending order, schools responded positively to the following:

(2) The objectives will facilitate student learning: 17 schools.

(5) They will facilitate evaluation: 17 schools.

(4) They will facilitate a problem-based approach to learning: 14 schools.

(3) They will facilitate an integrated approach to learning: 13 schools.

(1) They will be achieved: 11 schools.

Question 17-M

Has the existence of the objectives had any impact on the following aspects of the educational programme?

(1) Teaching/learning activities (if so, please give examples)

(2) Evaluation methods (if so, please give examples)

(3) Other (please specify)

Table 17-M. Numbers and Percentages of Respondents Indicating Impact of Objectives

No. / Ans.	(1)		(2)		(3)	
	N	%	N	%	N	%
Yes	16	76	13	62	1	5
No	-	-	-	-	-	-
No Ans.	5	24	8	38	20	95
Total	21	100	21	100	21	100

Sixteen schools responded that the existence of objectives has had an impact on teaching/learning activities and thirteen schools said there has been an impact on evaluation methods.

The last three questions (18M to 20M) are concerned with the evaluation and revision of the objectives.

Question 18-M

Are there provisions for a periodic review of the objectives? If so, what is the review based on?

(1) Students' performance data

(2) Operational research data

(3) Evidence of changing needs

(4) Other (please specify)

Table 18-M. Numbers and Percentages of Responses Concerning Review of the Objectives

No. / Ans.	Yes		(1)		(2)		(3)		(4)	
	N	%	N	%	N	%	N	%	N	%
Yes	17	81	15	71	6	29	15	71	6	29
No	-	-	-	-	-	-	-	-	-	-
No Ans.	4	19	6	29	15	71	6	29	15	71
Total	21	100	21	100	21	100	21	100	21	100

According to 15 schools, the review of objectives is based on student performance data and evidence of changing needs. Operational research was reported being used only by six schools.

Question 19-M

If there is a periodic review of the objectives, who is involved in the review?

(1) Teachers

(2) Practitioners

(3) Process experts (i.e., education specialists)

(4) Students

(5) Administrators

(6) Consumers (i.e., patients)

(7) Others (please specify)

Table 19-M. Numbers and Percentages of Schools Stating Who is Involved in Review of Objectives

No. / Ans.	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	16	76	11	52	9	43	14	67	13	62	2	10	1	5
No	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No Ans.	5	24	10	48	12	57	7	33	8	38	19	90	20	95
Total	21	100	21	100	21	100	21	100	21	100	21	100	21	100

Sixteen schools said that teachers were involved in the review of objectives. Fourteen schools involved students; thirteen schools involved administrators; and 11 schools involved practitioners. Only nine schools used process experts and only two schools stated that consumers participated in the review. Two schools answered "no" to all items.

Question 20-M

In the review of objectives,

(1) Does such a review facilitate curriculum modification?

(2) By what means? (Please specify)

Table 20-M. Numbers and Percentages of Respondents Indicating Review Facilitates Curriculum Modification

No. / Ans.	(1)		(2)	
	N	%	N	%
Yes	13	62	-	-
No	1	5	-	-
No Ans.	7	33	21	100
Total	21	100	21	100

Thirteen schools said that a review of objectives does facilitate curriculum modification. Only one school did not feel this way. Seven schools did not answer this question.

3. General Commentary

In general, there were no differences between the patterns of responses of schools of nursing and those of schools of medicine. That, in itself, is interesting since the geographical distribution of nursing schools in this study is different from that of the medical schools. Table 1-S below indicates this difference quite clearly. Evidently, the geographic setting was not a significant influence on how objectives were formulated and used in these schools.

Table 1-S. Numbers of Respondents According to Region and Type of School

	Type of School	
Region	Nursing	Medicine
EURO	9	3
EMRO	5	2
SEARO	1	8
WPRO	1	3
AMRO	25	7
AFRO	1	1
TOTAL	24	24

Intensive study of the responses, including the remarks, suggests that some responses are based on sound, "hard" data while others may reflect opinions and estimates rather than facts. In most instances, however, where estimates, opinions, or guesses might be the basis for responses, they seemed to be reliable and acceptable for the purpose of this study.

It might be important to note that respondents often did not distinguish the three basic levels of educational objectives: 1) institutional (overall functions); 2) intermediate (activities); and 3) specific (tasks).[1] For the most part, the remarks helped to clarify this situation and again, for the purpose of this study, the results are considered acceptable.

While the responses are of acceptable quality for this type of research, it should be pointed out that there were some few instances in which the respondents may not have fully understood the question. Occasionally, for example, respondents did not completely follow instructions with regard to the open-ended questions. While it is not possible to summarize data from such a lengthy and complex questionnaire with so many open-ended questions, the investigators were able to generalize certain situations and to indicate some interesting findings.

With regard to the persons involved in the development of the objectives, teachers were universally part of that process - in both nursing and medical schools. Students were seldom consulted and the consumers of health care were almost never included. Some ambiguity in the question concerning the decision-making process makes it difficult to generalize here, but it is clear that collaborative consideration was involved in the majority of the cases. The difficulty is to know how the decision was made and exactly who was part of that process. Finally, schools reported that the numbers and variety of people involved in the review process were most important in preventing bias in the design and adoption of the objectives. (One school expressed surprise that a question about "bias" had even been asked.)

Concerning the information used as background and resource for the development of objectives, nursing schools seemed to have reviewed health problems and health needs of society somewhat more than medical schools although half of the latter did report consideration of research data on health manpower. It seemed quite clear that existing educational systems and philosophies had a significant influence on the development of educational objectives in both medical and nursing schools. While responding schools seem to have understood the importance of having objectives include specific competencies, there was a clear indication that they have difficulty in doing so and often substitute vague generalities for the more specific competencies, functions, and/or tasks of the professional.

Concerning the characteristcs of the objectives, nursing schools seem to have used "action verbs" far more than medical schools, although they are seldom derived from professional tasks. While such terms need not be used perhaps in general objectives at the institutional level, they certainly should be prominent in the objectives at the other levels. Almost all schools - both nursing and medical - indicated that their objectives were internally consistent and quite realistic. Many commented that there was not enough time available, but it was not clear whether they were referring to student time for learning, to faculty time for developing objectives (and for curriculum planning), or to institutional time for teaching/learning activities.

Finally, it is quite clear that the acquisition of knowledge seems to be the most important, as reflected in the objectives, although it is true that schools of medicine expressed concern about not achieving enough in the development of proper attitudes.

When reporting on the intended use of objectives, most schools indicated that they had indeed given thought to this question and even gave examples of their use. However, none seemed to have developed a systematic plan for their use. Decisions in this area, like those in the development and adoption of objectives, are reported to be made jointly by faculty, administration, and practitioners; students are seldom reported to be involved. Objectives are distributed to students widely and often appear in school publications. In general, teachers seem to be informed about school objectives; those who prepare them have copies and new faculty members receive them. Some teachers, however, do not seem to care about them. In medical schools, some respondents suggested in their remarks that some teachers have a tendency to be absorbed in their respective specialties and, therefore, are not interested or concerned.

[1] See page 3 and 7 for an explanation of these objectives

In most schools, the respondents confirmed the usefulness of objectives. It is interesting to note, however, that the number of those not answering this question was greater, suggesting perhaps a weariness with the length and difficulty of the questionnaire plus a feeling that the question(s) had already been answered earlier. A few even expressed doubt as to the value of objectives.

Finally, revision of the objectives was reported commonly; this ranged from an on-going process to one which occurs at regular time intervals (e.g., every five years). It did seem, however, that there was little if any attempt at a systematic evaluation of the objectives and their use.

4. Problem Areas

The following conclusions and recommendations were formulated on the basis of an analysis of the data, remarks by the respondents, and the accepted criteria for evaluation of learning objectives.

They are presented in the form of a list with occasional elaboration.

4.1 There seems to be a lack of understanding (or of acceptance) that objectives at all levels should be derived from and expressed in terms of function and/or task that the graduate is to perform.

4.2 The statement of objectives does not seem to sufficiently reflect the real health needs of individuals and of society.

4.3 Consumers of health services are not consulted.

4.4 Inter-professional participation seems to be lacking.

4.5 There does not seem to be a wide-spread attempt to gather data on teaching and learning to aid in the development, use, and evaluation of educational objectives.

4.6 Nursing and medical education might profit from careful research on the usefulness of educational objectives. Skeptics might not reject the use of educational objectives if there were a growing body of data attesting to how valuable objectives are to students and to teachers and, in the final analysis, to community health.

4.7 Teachers need more time to devote to educational planning activities.

4.8 Educational institutions need to find ways to persuade their teachers that spending time on teaching responsibilities is at least as important as concentrating on specialty interests. This might involve exploration of the universal reward system used in higher education.

4.9 Schools using objectives should be encouraged to include a systematic plan for that use.

4.10 This analysis suggests that too many schools believe that passing the examination(s) is the major purpose to be included in the statement of objectives rather than the development of requisite competence to practise. Policy-makers need to give attention to this.

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5

CASE STUDIES

5.1. BRANDON GENERAL HOSPITAL SCHOOL OF NURSING

5.2. UNIVERSITY OF THE PHILIPPINES SYSTEM, HEALTH SCIENCES CENTER, COLLEGE OF NURSING

5.3. PADJADJARAN UNIVERSITY, FACULTY OF MEDICINE

5.4. UNIVERSITY OF NEWCASTLE, FACULTY OF MEDICINE

5.5. BEN GURION UNIVERSITY OF THE NEGEV, UNIVERSITY CENTER FOR HEALTH SCIENCES

5.1

CASE STUDY NO. 1

BRANDON GENERAL HOSPITAL, SCHOOL OF NURSING, BRANDON, MANITOBA, CANADA
COMMENTARY by S. Abrahamson

This case-study presents a clear picture of how educational objectives were formulated and used. A review of Appendices A, B, C, and D - in that order - reveals the progression from teacher-oriented to learner-oriented objectives. For example, in a December 1967 faculty statement one can find the following:

> The educational programme is planned to assist the student...to understand the biological, physical and social science principles basic to nursing.

Compare that with this example from Appendix C (page 2):

> The graduate...uses the nursing process in giving direct nursing care to individuals or groups of patients ... (applying) principles derived from the biological and social sciences... (assessing) needs based on information obtained from the patient, the family, and other members of the health team... (developing) individualized plans of care based on the assessment....

But the best expression of their learning objectives is to be found in the description of "competencies" expected of their graduates (Appendix D); they reflect a congruence between the institutional objectives and the definition of professional tasks.

Appendix D is an illustration of how the development of learning objectives has influenced the various aspects of the curriculum design. This case study provides good examples of the way in which educational objectives can be used to guide not only curriculum planning but also teaching-learning experiences and assessment of student performance.

In addition to providing information on the development of learning objectives, this case study includes other interesting aspects of educational processes worthy of note and comment. First, the history of curriculum change in this school is a reminder of the time, effort, and energy required for such activities. Obviously, this school of nursing was prepared to commit a significant amount of faculty time to what are considered important activities. On page 52 it says that "...faculty read widely and spent hours in discussion and in individual work." In the original case study material there was mention of three faculty members being relieved of teaching duties in order to provide the entire faculty with ideas and suggestions to which they could all then react during their planning activities. Educators should not attempt curriculum planning activities without fully understanding that a significant commitment of time and effort is essential.

The repeated reference to group efforts emphasizes a second area of importance. The development of learning objectives and, indeed, the entire curriculum planning process, demand extensive group dynamics. This case study makes it quite clear that group discussion was used regularly and that consensus was necessary in making final decisions.

A third item of importance is the role of the chief administrative officer of the school who stimulated, pushed, directed, and led the faculty through a curriculum revision process. Without the dedication, commitment, and support of the chief administrative officer, educational planning activities are often doomed before they start. A committed administrator not only provides personal support and encouragement but also frequently offers material support in the form of consultants, special materials, or even travel to observe other practices.

Fourth, this case study frequently illustrates the importance of the four C's of curriculum planning of Edward Krug.[1] He stated that all curriculum planning should be comprehensive, continuous, cooperative, and concrete. It is apparent that all of the planning activity grew out of a need expressed at that time, thus the planning was "concrete". Moreover, while the planning activity started at a given time with one problem, it soon moved to a related area, thus "comprehensive": improvement in one area led to the need for revision of other parts of the curriculum; inconsistencies appeared between stated objectives and faculty expectations. Then, too, the planning processes described here involved faculty, students, and others and thus were "cooperative". They were carried on over many years, therefore "continuous".

Indeed, the Brandon case study refers to a "circular process": a feeling that nothing was ever completed. In good educational planning, such tasks are never "finished". Professor Robert S. Harnack of the State University of New York at Buffalo (U.S.A.) has stated it quite simply many times:"A curriculum that is unchanging is an educational programme in trouble. Times change, needs change, goals must then change, and programmes to achieve those goals must be modified appropriately. Faculty dedication and commitment are essential".

Finally, the study shows that this training institution considered all the elements of teaching and learning, e.g., objectives, curriculum, evaluation, etc. in the light of the school's philosophy and the characteristics of the beginning students. Moreover, the curriculum planning process was improved by the collection of data concerning recent graduates. This came from the graduates themselves and from their supervisors, and contributed to a more relevant curriculum.

□ □

If we have objectives that are important to achieve, that is, if there is a genuine need for them to be achieved because a meaningful consequence would result in achievement or non-achievement, then it is also important that we find out if that achievement was accomplished. We cannot do so by comparing one student with another, we can only do so by comparing the performance of each student with the performance called for by the objective.

Mager

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The Brandon General Hospital School of Nursing

Based on an original case study prepared by
Mrs S.J. Paine, Director of Nursing Education

INTRODUCTION

This case study describes the educational process for the preparation of nurses at the Brandon General Hospital (BGH) from 1965 to 1981. Reference will be made to some of the main stages in the historical development of the school since its establishment in 1890, and in this respect a brief description of the school is pertinent.

Brandon General Hospital is located in a medium-sized city serving a large agricultural community. In earlier years the Hospital was an acute care centre but it now provides both acute and rehabilitative services as well as serving as a regional referral and resource centre for the surrounding area. It is now among the largest hospitals in Manitoba, and the only one of a comparable size outside the province's major urban centre. The city and surrounding area also have a wide variety of community health services, facilities for extended care, and a major psychiatric care facility.

The School of Nursing is administered by the Hospital, and until the middle nineteen sixties it was an integral part of the Nursing Service Department. During that period, there was a separation of basic nursing education from nursing service, and the School now functions independently within the current hospital organization. The faculty has primary responsibility for planning, developing, and implementing the curriculum.

Throughout the past fifteen years, influenced by changes in personnel, expansion of hospital services, construction of new facilities, and shifts in general education, the philosophy and objectives of the programme, which provide the framework and direction for the ongoing development of the curriculum, have undergone changes.

The philosophy and objectives of the school, as expressed by the faculty, reflect the changing needs of the community, the students, and the nursing profession. They also reflect the way faculty members interact and the influence of the backgrounds of these individuals on nursing education and practice.

Previously the curriculum was based on the medical school model (illness centred) and on clinical experience that would suit hospital needs. It was also planned according to medical specialties. Over the years the curriculum underwent numerous minor and three major revisions.

At all stages of the revision there was considerable commitment of staff, involvement of students and consultants, and continuous follow-up of former students in their professional activities.

The approach to change was largely pragmatic given that the main focus of nursing education is to prepare practitioners for service. Thus theories and knowledge about nursing tended to be selected because they were perceived as being useful and reasonable to meet defined health needs. The selection of concepts to be introduced in the philosophy and objectives of the school and the way in which the curriculum was constructed was also eclectic. The faculty chose ideas and approaches found in studies, current nursing literature, and in reports from a number of groups and individuals influential in nursing education both in Canada and in the United States.

A description of changing health needs found in the current literature and in a government report[2] also influenced the philosophy, institutional and learning objectives, and curriculum of schools of nursing.

Change occurred slowly but continuously in the periodic introduction of new concepts in health, nursing, education, and management, such as :

- health promotion as well as care of sick people; consequently, concepts other than hospital-based, illness-oriented clinical experience are needed in nursing education;

- objectives of school and curriculum should reflect defined, changing health needs of the community;

- learning is an active process on the part of the students;

- nursing is a problem-solving process;

- students must be given the status of learners in the practical experience phases of the programme;

- nurses function in different roles and at different levels, therefore several levels of nursing education are needed; and

- the holistic view of man in health and disease.

However, most nursing schools remained hospital bound. The roles in nursing were not clear; employers had expectations for which nursing education programmes did not prepare graduates. Revision was continued and still continues at the School of Nursing in Brandon General Hospital. It is a circular process which, once achieved, begins anew in the face of ever-changing needs and circumstances.

1. PHILOSOPHY, OBJECTIVES, CURRICULUM, AND TEACHING : how a philosophy for the school was elaborated ; how learning objectives, curriculum, and teaching/ learning methodology were developed through continuous revision.

The following is a summary of the main characteristics of each of the major steps taken over the years by the school to improve the preparation of nurses for nursing practice in the hospital and in the community.

1.1 The Curriculum prior to 1965

The following statement of purpose for the School of Nursing appeared in brochures and student handbooks of the period.

> The purpose of the Brandon General Hospital School of Nursing is to select well-qualified applicants for basic professional nursing; to prepare them as beginning practitioners who are fully aware of their responsibilities to give comprehensive nursing care in hospitals and the community.

Note that the purpose includes 'the community' as a place where the graduate would be able 'to give comprehensive nursing care'. An examination of the programme of that time reveals that there was limited opportunity for anything but hospital-based, illness-oriented practice. Very few of the graduates were employed in other than acute-care settings, and this fact guided the curriculum design, in spite of what was said in the statement of purpose.

The curriculum at this time was based on a guide for instructors in schools of nursing in Manitoba.[3] It included in its preamble some statements of beliefs and values, which may or may not have been accepted or utilized by teachers, but it did not clearly delineate the purpose of nursing education nor the expectation of the graduate.

The curriculum gave directions to instructors for delivering information to students and ensuring that they were ready for hospital service needs as quickly as possible. The student was seen as a passive learner in the classroom and as a worker in the hospital. Although it was not specifically stated, the nurse was expected to be knowledgeable in all areas and provide service wherever the hospital needed staff.

1.2 The 1965 Curriculum

The first extensive, formal statement of philosophy and objectives appears in the records of the School of Nursing in 1965. These statements were developed by the faculty under the guidance of Elva Cranna, director of the school from 1952 to 1976. Miss Cranna stimulated, pushed, directed, and led the faculty of that time through a curriculum revision process which is described by Ole Sand and others in the three volumes of the Basic Nursing Education Curriculum Study Series.[4]

The faculty read widely and spent hours in discussion and in individual work. The writings of Bloom[5], Tyler[6], Heidgerken[7], Brunner[8], and others guided their efforts. This resulted in a major curriculum revision implemented in 1965 for the class which graduated in 1968. This curriculum shifted the focus of the student's experience from service for the hospital to planned clinical practice under the direction of the School of Nursing. Consequently the hospital had to earmark funds for the salaries of nursing service staff without counting on student nurses who in the past had made up a great part of the hospital's manpower supply.

The philosophy and objectives were developed and modified over the years from 1965 to 1970. Unfortunately, they do not show enough how the faculty struggled to clarify and identify exactly what the School intended (See Tables 1 & 2).

Table 1 presents the evolution of learning objectives from 1965 to 1971. The examples show the early disappearance of vague statements such as "skill in critical thinking" and the ultimate disappearance of "understand the biological, physical, and social science principles basic to nursing".

TABLE 1. EVOLUTION OF LEARNING OBJECTIVES 1965 - 1971, BRANDON GENERAL HOSPITAL SCHOOL OF NURSING

EXAMPLE A, 1965	EXAMPLE B, 1967	EXAMPLE C, 1967	EXAMPLE D, 1969	EXAMPLE E, 1971
1. To understand the social, biological and physical science principles basic to nursing	1. To understand biological, physical and social science principles basic to nursing		1. Understand the biological, physical and social sciences principles basic to nursing	
2. To apply scientific principles to planning, giving and evaluating individualized nursing care of patients	2. To apply scientific principles to planning, giving and evaluating individualized nursing of patients	2. To apply scientific principles in planning, giving and evaluating individualized nursing care of patients	4. Apply scientific principles to planning, giving and evaluating individualized nursing care of patients.	2. Applies principles derived from the biological and social sciences in assessing patient needs, planning, giving and evaluating nursing care of patients
3. To develop skill in communication and interpersonal relations	3. To develop skill in communication and interpersonal relations	3. To use communications skills competently in working with others	5. Use skills in interpersonal relations by communicating effectively with the individual patient and others within the scope of nursing	7. Utilize communication skills to establish satisfactory interpersonal relationships with patients and coworkers
4. To develop skill in critical thinking	4. To function as a health team member who utilizes community health resources for improvement of patient care	4. To function as a health team member with a knowledge of community health resources	6. Aid the patient in meeting his immediate and long-term goals by utilizing the resources of the health team	8. Utilizes the resources of the health team and community health agencies to assist the patient in meeting his immediate and long-term goals
5. To function as a health team member with a knowledge of community health resources				
6. To utilize opportunities for personal and professional growth	5. To utilize opportunities for personal and professional growth	5. To utilize opportunities for personal and professional growth	7. Utilize opportunities for personal and professional growth	9. Utilizes opportunities for personal and professional growth

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TABLE 2. ADDITIONAL LEARNING OBJECTIVES, 1967-1971,

BRANDON GENERAL HOSPITAL SCHOOL OF NURSING

Example C, 1967	Example D, 1967	Example E, 1971
1. To give patient-centered care based upon the medical care plan	2. Assess the needs for nursing action by observing objectively, communicating purposefully and reporting meaningfully	1. Identify common, recurring nursing problems presented by patients
		3. Analyze and interpret information obtained from physicians, other members of the health team, the patient, and the family; and utilize this information to modify care for patient with common recurring nursing problems in a variety of situations.
	3. Identify individual patient needs which come within the scope of nursing	
		4. Give and evaluate individualized nursing care which includes the use of independent nursing measures and the carrying out of medically delegated techniques
		5. Is responsible for personal competence in performance of nursing skills and techniques
		6. Utilizes knowledge and ability to make adequate safe nursing judgments.
		10. Utilize opportunities for health teaching of patients and families in a variety of health care situations.

Note: These examples are quoted from documents submitted with the original case study. Example A comes from the "Brandon General Hospital School of Nursing Statement of Philosophy" and from the "Objective of the School", April 13, 1965. Example B is from "Brandon General Hospital School of Nursing... Philosophy and Objectives...", December 1967. Example C is an excerpt from the "Brandon General Hospital School of Nursing Brochure, 1967". Example D comes from a document including sections entitled "Aim", "Statement of Philosophy", and "School Objectives", dated September 1969. Exemple E is from another document including "Purpose", "Philosophy", and "Objectives of the Program", dated April 1971.

The aim of the programme appeared in a revised form in 1969 and specified the areas of nursing practice for which the graduate was being prepared: hospitals, nursing homes, medical clinics, doctors' offices, industrial firms. The objectives became statements of what the graduate would be able to do. They were expressed in general terms, but did provide a certain direction for curriculum development.

In 1965, one of the objectives stated that the curriculum was designed to assist the student "to develop skill in critical thinking". The objectives of that year's programme do not specify any course content or experiences that would meet this objective. The faculty recognized that critical thinking was a behaviour that could not be accurately measured and that they could not ensure learning experiences specifically to develop this skill. The statement was dropped from succeeding revisions. However, other learning objectives in succeeding years reflect the inclusion of problem-solving tasks which do require some critical thinking.

The following examples from course outlines show how some of the 1969 specific learning objectives were related to course selection, statement of course objectives, specification of individual knowledge and skills, and to evaluation. The statements of objectives were descriptions of competencies students would acquire.

Example No.1

Specific learning (terminal) objective.

The student will be able to: understand the biological, physical, and social science principles basic to nursing.

This objective called for courses in human anatomy and physiology, medical microbiology, psychology, and sociology.

In addition, selected unit* objectives from a nursing course indicate that the student was required to demonstrate this knowledge by applying it to patient care. Thus, for example, knowledge and understanding of the structure and function of the pancreas - included in the human anatomy and physiology course - were required to meet the following objective:

> Given a patient with diabetes mellitus, the student will be able to discuss the aetiology, pathology, and symtomatology of diabetes mellitus.

*The nursing programme is made up of different courses; these courses are divided into units. Each unit is made up of lessons.

Again, application of knowledge gained from the study of psychology was required when a student was given a patient with deviant behaviour.

> The student demonstrates acceptance of the situation by recognizing his/her own emotional responses and by controlling these.

Example No. 2

Specific learning (terminal) objective.

The student will be able to : use skills in interpersonal relations by communicating effectively with the individual patient and with others within the scope of nursing (members of the health team, patient's family, etc.).

This objective implies that the student know something about effective communication. In order to ensure this, a unit on communication skills was developed in the first-year nursing course. This included the following objective:

> To identify and use basic communication skills: listening, speaking, observing, and writing.

Theory and practical experience in these four areas were outlined in the content section of the course outline. The skill of 'writing' was included in several other units and was related to the specific ability to record information about nursing care in the patient's record.

Example No. 3

Specific learning (terminal) objective.

The student utilizes opportunities for personal and professional growth.

Course content to meet this objective is less easily identified. The emphasis that was given to this kind of behaviour is illustrated by the criteria for evaluation of clinical performance that was developed by the school in 1968.

> At Level I, the student accepts suggestions for improvement, and attempts to incorporate them in subsequent nursing care.

> At Level II , the student views all situations as a learning experience, and is alert to new learning situations and benefits from them.
>
> At Level III, the student accepts responsibility for his/her own learning experiences by seeking and utilizing many opportunities

The levels correspond to the behaviour expected in the first, second, and third year of the programme.

The preceding examples illustrate the stage at which the faculty was working in the late 1960's. There were many gaps and inconsistencies, so work continued.

In the planning of the curriculum particular emphasis was placed on behavioural objectives. These described, in terms of activities, what the student would be able to do in a given set of circumstances. It was an attempt to specify a level of acceptability and thus a performance standard for the measurement of achievement. Through the years 1962 to 1972, the work of Mager provided an excellent guide for the faculty.[9]

During this time, teaching methodology and strategies were changing. The statement of beliefs about learning, which is quoted below, particularly the part related to learner participation, provided the rationale for reducing formal lectures and for introducing more variety in learning experiences.

> We believe that learning is a process which is evidenced by changes in behaviour, attitudes, and values that persist beyond the learning experience. A democratic attitude which fosters inquiry and self-activity provides an environment which is conducive to learning.

These learning experiences included small group work, use of audio-visual materials of various kinds, observational and participatory experiences in a variety of health care facilities other than the acute-care hospital, and time provided for individual, student-selected self-instruction.

The ongoing curriculum review and revision was influenced by a movement in Manitoba nursing schools to change nursing education from the traditional three-year apprenticeship model to a shorter, educationally oriented programme. The duration of the programme was gradually reduced as courses and learning activities were redesigned. By 1970, the programme was presented in thirty calendar months.

The 1971 Curriculum

The curriculum developed for the class which entered in September 1971 was a programme of educational activities planned over two calendar years (88 weeks). This major revision was in line with that taking place in many diploma schools of nursing in Canada and in the United States of America. At that time professional associations were delineating functions and educational preparation for two levels of nursing practitioners prepared either through a four-year university baccalaureate programme in nursing education or through a two-year diploma programme carried out in a hospital-based school or in a community college.

The school prepared a list of competencies* expected of the graduate nurse. This was an attempt on the part of the faculty to clarify for themselves and for future employers of nursing personnel the level at which the graduate could be expected to function.

The ten objectives of this programme were quite detailed and specific. The first one mentioned common recurring health problems. This was intended to limit the content, since it was realized that no programme could include all nursing knowledge. This is illustrated by the following samples of course objectives, unit objectives, lesson objectives, and clinical practice objectives used during the period 1971-1973.

Example No. 4. Nursing I

Unit Objective - Unit IV

2. To understand the hygienic needs of the patient.

Lesson objective - Unit IV

2. Identify the adaptations made for varying age groups to meet their physical hygienic needs.

Clinical Objectives:

a) The student is able to identify obvious nursing care problems.
b) The student is able to plan her assignment and adapt it to meet the needs of the patient.

Some aspects of the nursing process appeared in the clinical objectives. None of the course outlines, however, included this process.

In the Nursing II course there is some emphasis on common aspects of health care and major health problems.

Example No.5. Nursing II

Course Objectives

The student is able to:

1. Identify and discuss the major health problems in Canada.

7. Use the nursing process in providing care for adults and children with common physical and mental illnesses.

Unit Objective - Unit IV

The student is able to:

2. Adapt nursing care to meet the altered needs of patients with inadequate oxygenation.

Clinical Objective - Unit IV

The student is able to:

7. Adapt basic nursing care for patients with common manifestations of problems of oxygenation.

The succeeding objectives are related to six areas of circulatory and respiratory problems and describe what the student should know about signs, symptoms, aetiology, diagnostic procedures, medical therapy, and nursing care for nine disease processes, including 29 conditions identified by their medical name.

In spite of their efforts to teach nursing care, the Faculty was still struggling with a disease-oriented model. The examinations at that time show very clearly that students had to know something about all of the specific disease conditions, as there were very few questions on general principles of nursing care.

At that time (1971-1973) the nursing process was used as the organizing principle for the construction of the clinical evaluation instrument for the second year.* None of the objectives concerning theory, however, specified content related to the nursing process; the clinical instruction was expected to include this.

The two-year diploma programme offered by the Brandon General Hospital School of Nursing, based on the 1971 curriculum described above, was offered to four classes, the final class graduating in 1976. For each of these classes, follow-up studies were done. These studies were based on a survey carried out by questionnaires sent to all the graduates and their employers six months after graduation. The questionnaires sought the opinion of the employer and the graduate on the effectiveness of the programme in preparing the graduate for work as a beginning practitioner. The results of these surveys were used in curriculum evaluation and in the ongoing development of objectives and learning activities.

Determining and re-determining nursing needs, formulating learning objectives, and ensuring that these were reflected in the curriculum and in the criteria for evaluating student performance became an ever-ending circular process. In spite of the time and effort spent on planning, nothing was ever completely finished; an improvement in one part of the curriculum led to a need for revision of other parts of it. Inconsistences appeared between stated objectives and faculty expectations; evaluation tools (particularly those used for clinical performance) became unsatisfactory and too much time, energy, and money was being spent to achieve results which proved to be only partially effective. In addition to these frustrations, a new type of student was beginning to enter the programme.

*See Appendix B

* See Appendix A.

There was a gradual increase in the number of mature students; that is, people who had had other work or educational experiences and who had selected nursing as a new career. As the student group became more heterogeneous, it was found that the strategies which had worked well with a nomogeneous group of eighteen-year-old high school graduates were not working as well with these new students. The mature students arrived with varied needs, experience, and knowledge. Teachers had to do individual assessments to determine what each student had already done and what other competencies he/she needed to acquire.

Students in this older age group often had family responsibilities which meant that there had to be some understanding of the student's need to divide his/her time between school and family. It meant that there had to be some flexibility when planning the student's learning experiences if these students were to be successful. This group of adult students necessitated consideration for more individualized teaching-learning experiences. The situation also called for a re-examination of the whole process of planning and led to the decision that a new approach was needed in the development of objectives, curriculum, and evaluation tools.

The 1975 Curriculum

In their attempt to prepare a new curriculum during 1971-1974, faculty members became acquainted with the first edition (1973) of Roe and Sherwood's learning experience guides for nursing students,[10] best known as LEGS.

The struggle to design a more flexible curriculum that would take into account individual needs and differences, provide greater variety of learning experiences, and improve the evaluation processes prompted a close examination of the LEGS approach to the teaching of nursing. LEGS presents an organized approach to individual instruction. It offers a flexible design and a clearly defined structure. This programme is divided into 14 progressive levels and is based on a mastery of identified minimum content, allowing individual students to work to a greater depth or extent.

Each of the levels has three learning experience guides(LEG). Each LEG is structured to assist the student on an individual basis; each one has statements of learning objectives, with an outline of learning experiences that meet the objectives. The options described in the learning experiences allow the student and teacher to choose different ways of learning. These include reading, discussion, use of varied audio-visual materials, examples of self-directed activity, as well as simulated and actual practice. The teachers found that they could be more creative and could use a wider variety of teaching strategies since they are able to spend more time with students and less on curriculum planning.

This is a major advantage to using the LEGS programme to teach nursing. There is better use of faculty time in curriculum planning. The prepared framework is known to all teachers so they can devote their energies to planning more effective learning experiences in their particular areas of responsibility, using the learning objectives given in LEGS.

The basic LEGS plan allows for revision, addition, or deletion of objectives, or of any of the guides, as the faculty sees the need to strengthen or modify a particular area. Teachers can also offer other learning experiences other than those suggested in the LEGS.

The purpose, philosophy, terminal (specific learning) objectives, and expected competencies of the graduate of the two-year programme at the School of Nursing underwent partial revision again in 1975, as the faculty began to use the LEGS (see Appendix C). These statements, with the exception of the expected competencies, have been only slightly modified since then. The faculty, as one result of working with LEGS, focused more and more on the effective use of the nursing process as the desired terminal objectives. The nursing process has been defined as "a term applied to a system of characteristic nursing interventions in the health of individuals, families and/or communities. In detail, it involves the use of scientific methods for identifying the health needs of the patient/client/family or community and for using these to select those which can most effectively be met by nursing care; it also includes planning to meet these needs, provide the care and evaluate the results".[11] It was decided that the 1975 list of competencies did not reflect these objectives. A revision was made in 1980, adapted from statements of expectations as suggested by LEGS (see Appendix D). This list now describes the behaviour within the four areas of the nursing process that indicates effective

performance. Work continues on these statements and data from yearly follow-up studies is used to update them.

2.EVALUATION OF STUDENTS

The evaluation of the student's knowledge and practical skills is based on the learning objectives. The faculty now devotes more time to the development of written examinations which test more accurately what the student has achieved in relation to the stated programme objectives. The clinical evaluation instrument has also been re-designed to help students and teachers assess clinical performance.

Time was devoted to developing and improving the faculty's skill and competence in evaluation through workshops on designning tests and the advice of consultants.

Evaluation methods were based on the statements in the school's philosophy of learning. The following two portions of the philosophy will serve to illustrate this :

> We believe: that learning results from a modification in behaviour that persists beyond the learning experience and can be observed, identified, and measured objectively and subjectively; and
>
> that goal-directed learning takes place most effectively in an environment which promotes participation of the learner, recognizes individual learning differences, and encourages critical thinking.*

Because behaviour can be observed, the objectives describing the desired behaviour had to indicate what was to be observed. These behavioural objectives provided the criteria for evaluation, and if the behaviour could be described in those terms, then the student could be evaluated as having achieved the desired outcome.

Based on the belief in individual learning differences, the faculty gives four kinds of tests: quizzes, 'take-home' tests, level tests, and comprehensive examinations. Short quizzes are given frequently. They are made up of short-answer questions and test small amounts of material. The 'take-home' tests are done by the student as an assignment and they may use whatever resource material they choose to answer the questions. These require the student to write short, essay-type answers and to explain the reason for their replies. The level tests are longer, and are given at the end of each level, according to LEGS; they are composed of multiple-choice and short-answer items. The comprehensive examinations are given at the end of each nursing course, that is, one at mid-term and one at the end of each year. Each of these exams may test content from any of the preceding courses. The final comprehensive exam, at the end of the second year, tests material from all the courses. These comprehensive examinations are designed around patient situations and all items are multiple choice. These various tests, all based on the objectives, give the students some variety in the way they can demonstrate their learning gains.

Evaluation of clinical performance is also based on statements of expected comptencies. Both the student and the teacher contribute written performance reports describing the progress made towards achieving the objectives. This is a subjective assessment and allows the student to participate in determining the grade for clinical practice.

The examples attached to Appendix D illustrate how the current statements of terminal objectives and competencies direct the development of various aspects of the curriculum. These examples include LEGS objectives, learning experiences, examination questions, and clinical performance expectations, and show how each is related.

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*See Appendix D

IN CONCLUSION

This School must be regularly approved by the Manitoba Association of Registered Nurses. Meeting this approval has been a contributing factor in the ongoing review and revision of the successive curriculum designs of the Brandon General Hospital School of Nursing. The Manitoba Association of Registered Nurses has the authority under the Provincial Nurse Practice Act, to approve schools of nursing in Manitoba. Every other year this School's programme is examined in depth. The School is required to submit an extensive report of all programme activities, which must demonstrate that the standards set by the Manitoba Association of Registered Nurses are being met.

This report is reviewed by a nurse consultant, appointed by the Association, who then visits the School and examines any aspect of the programme which is felt to be necessary. The consultant, in a report to the Association, recommends any needed improvements. The Association, in turn, conveys these to the School as part of a formal notice of continuing approval.

The recommendations for improvement are then used by the faculty in designing the curriculum. This approval process has been, and continues to be, a valuable part of all phases of curriculum review and revision.

The foregoing discussion of the three major curriculum revisions implemented at the Brandon General Hospital School of Nursing has focused on the effect of the approach to curriculum design based on "learning by objectives". It is hoped that the processes involved and the examples of the various course objectives and materials have provided some understanding of the influence of behavioural objectives on curriculum content, teaching and learning methodology, and evaluation. The other major factor which is essential to this type of curriculum development is the involvement and commitment of all faculty members. The School of Nursing has been fortunate in having individual faculty members who are committed to a curriculum based on "learning by objectives".

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APPENDIX A
Page 1

BRANDON GENERAL HOSPITAL SCHOOL OF NURSING
CLINICAL EXPERIENCE RECORD
NURSING II CLINICAL EVALUATION* _____ (level)

Name _____ Class _____

Date of Experience from _____ to _____
(day, month, year) (day, month, year)

Grading	Clinical Behaviours	Remarks

Nursing Process:

I. Assessment:

a) Collects pertinent data by:
1. Making pertinent observations regarding
i) patient's physical condition.
ii) patient's emotional status.
2. Interviewing the patient and family.
3. Utilizing appropriate resources and materials.
4. Recalling and relating previously acquired information.

b) Interprets collected data by:
1. Explaining the significance of data collected in relation to
i) developmental needs.
ii) needs resulting from the disease process.

c) Makes a nursing diagnosis by:
1. Stating altered needs which require nursing intervention.
2. Establishing priorities.

II. Planning:

a) Identifies nursing goals by:-
1. Stating short-term goals.
2. Stating long-term goals.

b) Determines nursing intervention by:
1. Formulating possible solutions.
2. Selecting the most appropriate solution.
3. Explaining rationale of selected intervention.
4. Determining needs which may be met by personnel in other health services.

*Selected from evaluation materials, 1974 Class Records

Grading	Clinical Behaviours	Remarks

III. Implementation

a) Performs nursing procedures competently and effectively by:
   1. Stating and applying scientific principles underlying nursing procedures.
   2. Adapting basic skills according to patients' individual needs.
   3. Demonstrating manual dexterity in the performance of skills.
   4. Providing a safe environment for the patient.
   5. Recognizing capabilities and limitations and taking appropriate action.
   6. Recognizing emergency situations and initiating appropriate action.

b) Establishes and maintains effective interpersonal relationships within the patient-care setting by
   1. Maintaining appropriate communications while carrying out nursing interventions.
   2. Using therapeutic communication techniques.
   3. Utilizing the teaching process in patient instruction.
   4. Encouraging active participation of the patient and family in rehabilitation.
   5. Reporting and recording pertinent information promptly and accurately in a concise, accurate, legible manner.
   6. Maintaining a courteous manner so as to working effectively with members of the health team.

Grading	Clinical Behaviours	Remarks

IV. Evaluation:

a) Evaluates the nursing care plan by:
   1. Observing the patients' response to intervention
      i) nursing intervention
      ii) intervention by other members of the health team.
   2. Observing and identifying needs arising as a result of changes in the patients' condition.
   3. Restating attainable and valid goals and revising the nursing care plan.

Personal and Professional Growth:

I. Demonstrates personal and professional growth by:-
   a) Recognizing the legal aspects of patient care and following established policies of the institution.
   b) Accepting responsibility for seeking and using opportunities for learning.
   c) Participating effectively in group projects and conferences.
   d) Accepting responsibility for completing assignments, acknowledging and correcting own errors.
   e) Assessing her progress objectively.
   f) Accepting guidance and taking appropriate action.
   g) Identifying and understanding her emotional reactions to stressful situations and maintaining composure.
   h) Demonstrating an awareness of the alterations in the needs of the patients over a 24-hour period and the total nursing care responsibilities.

CLINICAL GRADE:

Assessment	/9	
Planning	/5	
Implementation	/12	
Evaluation	/4	
Personal and Professional Growth	/7	Total:...../47

APPENDIX B

BRANDON GENERAL HOSPITAL SCHOOL OF NURSING

EXPECTED COMPETENCIES OF THE GRADUATE OF THE PROGRAM

A. TECHNICAL SKILLS

1. Administers or assists with all forms of personal hygiene.
2. Applies or administers heat and cold safely.
3. Provides for elimination through modified natural means --- bedpan, urinal, bedside commode.
4. Provides for elimination through use of enema or suppository.
5. Provides for urinary elimination by catheterization, insertion of Foley retention catheter, bladder irrigation.
6. Utilizes urinary drainage devices --- straight drainage, Kelly drip irrigation.
7. Accurately measures vital signs: - temperature, pulse, respiration, blood pressure and neurological signs.
8. Positions patients for comfort, prevention of pressure sores, correct alignment in traction and casts.
9. Promotes nutritional and fluid intake by oral means, or providing gastric feedings.
10. Inserts a levin tube and maintains gastric suction.
11. Assists with nutritional and fluid intake through maintenance of intravenous therapy.
12. Administers oral medications, intra-muscular and subcutaneous injections, rectal medications; instills eye, ear and nose medications, instills medication into catheters (with additional instruction and experience can instill medications intravenously).
13. Administers oxygen by catheter, mask, tent, and incubator.
14. Administers high humidity by Puritan steam, croupettes, Walton steamer.
15. Performs mouth-to-mouth resuscitation and has a working knowledge of the use of the ambu bag.
16 Maintains an adequate airway by means of tracheal suctioning.
17. Performs suction and drainage techniques.
18. Assists with diagnostic techniques -- e.g., lumbar puncture, isotope procedures, endoscopy, preparation for X-ray, collection of specimens.
19. Adapts principles of medical asepsis to set up and maintain isolation precautions in child and adult services.
20. Adapts procedures and uses a variety of equipment safely and with little assistance.

B. COMMUNICATION SKILLS

1. Listens to the patient, elicits and uses information to meet individual patient needs.
2. Identifies cues, verbal and nonverbal, of physical, emotional, spiritual, social, and protective needs, and takes appropriate action toward meeting the need of the patient.
3. Talks in a manner the patient and family can understand, e.g., re: explanations, health teaching.
4. Accepts patients as individuals with their own ideas and beliefs and maintains non-judgmental attitude.

5. Observes and reports aspects of patient's condition to appropriate persons (re: illness, physical abnormalities, response to treatment, mental deterioration, emotional disturbance)
6. Shares pertinent information with others giving care to patients to provide for continuity and co-ordination of care.
7. Charts clearly and concisely and can use hospital record forms properly.
8. Uses appropriately lines of authority and communication.
9. Interprets doctor's orders and translates them into nursing action.
10. Teaches effectively health principles or home care to patients (e.g., diabetic teaching, mental health teaching).
11. Directs of manages purposefully her own behavior in relationships with patients and staff.
12. Recognizes the patients rights of privacy with regard to confidential information.

C. NURSING JUDGEMENT

1. Applies principles of normal growth and development to meet the needs of persons at various age levels.
2. Differentiates emergency from non-emergency situations in patient care setting.
3. Functions effectively in emergency or stress situations - initiates basic emergency care and seeks immediate assistance.
4. Seeks appropriate guidance, if patient's need is beyond her scope of ability.
5. Makes judgements and establishes priorities in giving nursing care to a group of patients presenting nursing problems.
6. Transfers knowledge of principles and adapts care and techniques necessary to new situations.
7. Adapts to major manifestations of common health disorders and the expected results of treatment care accordingly.
8. Assesses quality of care given and progress of the patient and revises plan of nursing care as necessary.

D. PERSONAL GROWTH

1. Accepts responsibility for her own activities, e.g., completes own tasks, acknowledges and corrects own errors.
2. Assumes responsibility for increasing her proficiency in procedural and interpersonal skills.
3. Demonstrates initiative by seeking information from reference material or qualified personnel due to an awareness of own limitations in knowledge and skills.
4. Increases her scope and depth of knowledge and skills by means of inservice and/or on-the-job training.
5. Maintains safe, effective standards of nursing care thus reflecting her integrity.

E. NURSING SERVICE RESPONSIBILITY

1. Is alert to changes in personnel such as physical condition or emotional stress and offers assistance.
2. Voluntarily assumes extra duties within limits of responsibility.
3. Co-operates with assignments or schedule change.

4. Follows established policy or procedure recognizing legal implications and safety factors.
5. Takes care to conserve supplies and equipment.
6. Protects legal rights of patients -- e.g., care of patient's property, consent form, release of information.
7. Assumes a fair share of the work load based on an overall awareness of the total nursing care responsibilities.
8. Gives clear directions to other workers when delegating responsibility.
9. Follows through on performance of delegated tasks and determines adequacy of performance.
10. Demonstrates awareness of the functions and limitations of others giving care to patients.
11. Realizes the patient's need for the services of paramedical people, e.g., occupational therapist, social workers, chaplain, etc.

APPENDIX C

BRANDON GENERAL HOSPITAL SCHOOL OF NURSING

DIPLOMA NURSING PROGRAM

PURPOSE

1. To prepare a beginning practitioner in nursing who:

   a) with the guidance of an experienced Registered Nurse, gives direct care to patients in acute and long-term care facilities and can assume responsibility for the direction of ancillary personnel.

   b) functions under direct supervision in complex nursing situations.

2. To prepare graduates for licensure as Registered Nurses.

PHILOSOPHY

We believe:

That man is a social being, entitled to equal rights and privileges as an individual within a society.

That man as an individual is part of total environment which includes family and community.

That individuals have common needs, and are unique in their ability to meet these needs.

That an individual's dignity and self-respect are dependent upon development toward self-direction and fulfillment.

That health encompasses physical, emotional, social, and spiritual well-being.

That man varies in his state of health relative to a wellness-illness continuum.

That nursing is concerned with the promotion and maintenance of health and the care of the ill.

That nursing is caring for and about people.

That nursing is an applied science based on principles from biological and social sciences.

That nursing is a commitment to individualization of care to enable the person to attain the optimum level of function or to conclude his life cycle as comfortably as possible.

That nursing involves the utilization of the nursing process in a variety of settings.

That nursing involves dependent-independent-interdependent functions encompassing collaboration and co-ordination.

That learning results in a modification in behavior which persists beyond the learning experience and can be observed, identified, and measured.

That learning results from interaction with the environment.

That goal-directed learning takes place most effectively in an environment which promotes participation of the learner, recognizes individual learning differences, and encourages critical thinking.

That nursing education is a continuing process which builds upon previous experience and knowledge.

That nursing education is a deliberate blending of knowledge, attitudes, and values directed toward fulfillment of a specific purpose: the health care of individuals.

That nursing education is concerned with the student's continuing development as an individual and as a member of the nursing profession.

That nursing education can be accomplished by a variety of planned learning experiences which need not be the same for each student.

THE GRADUATE:

1. Identifies common, recurring nursing problems presented by patients in a variety of situations.

2. Uses the nursing process in giving direct nursing care to individuals or groups of patients:

   a) applies principles derived from the biological and social sciences.

   b) assesses needs based on information obtained from the patient, the family, and other members of the health team.

   c) develops individualized plans of care based on the assessment.

   d) gives and evaluates nursing care which includes dependent-independent-interdependent functions encompassing collaboration and co-ordination.

   e) uses goal-directed communication to establish and maintain a satisfactory interpersonal relationship with patients, families, and co-workers.

   f) includes health teaching in daily nursing care based on unique needs of the patient as a member of a family.

   g) uses the resources of the health team and directs the patient or the family to community resources to assist them in meeting immediate and long-term needs.

3. Accepts responsibility for personal competence in performance of nursing skills and techniques.

4. Accepts responsibility for personal and professional growth.

5. Uses leadership skills to improve nursing care.

EXPECTED COMPETENCIES OF THE GRADUATE:

The graduate maintains safe, effective standards of nursing care.

A. Nursing Judgement

1. Uses principles of normal growth and development to meet patients' needs.

2. Demonstrates knowledge of major manifestations of common health disorders, and the expected results of treatment, by adapting nursing care accordingly.

3. Establishes priorities in giving nursing care to a group of patients presenting nursing problems.

4. Differentiates emergency from non-emergency situations in the patient care setting.

5. Functions effectively in emergency or stress situations - initiates basic emergency care and seeks immediate assistance.

6. Demonstrates recognition of capabilities and limitations by seeking guidance appropriately.

7. Applies previously learned principles in adapting nursing care to new situations.

8. Assesses effectiveness of care given according to the patient's response, and revises plan of nursing care accordingly.

9. Participates in assessment of nursing needs of all patients within the work situation, and in planning nursing care.

10. Assumes responsibility for those tasks and aspects of care which she/he has delegated to others.

11. Assists the patient and family in meeting their needs by initiation of referral to other health disciplines.

12. Implements the dependent nursing functions from the medical plan of care in accordance with the policies of the agency.

B. Professional and Personal Development

1. Accepts responsibility for own actions.

2. Assumes responsibility for maintaining and increasing competencies in nursing.

3. Recognizes limitations in knowledge and skills and demonstrates initiative by seeking information from reference materials or qualified personnel.

4. Increases scope and depth of knowledge and skills by using available opportunities for ongoing education.

C. Communication Skills: The graduate applies principles of communication in all interactions.

1. Listens to the patient - elicits and uses the information to meet individual patient needs.

2. Identifies verbal and nonverbal communication by the patient related to physical, emotional, spiritual, and social needs.

3. Talks in a manner the patient and family can understand, e.g., explanation, health teaching.

4. Maintains a non-judgemental attitude: accepts patients and others as individuals with their own ideas and beliefs.

5. Observes patient's condition and reports pertinent information to appropriate persons.

6. Shares pertinent information with others giving care to patients to provide for continuity and co-ordination of care.

7. Records accurately and legibly and can use agency record forms appropriately.

8. Uses lines of communication appropriately as indicated by lines of authority of organizational structure of the agency.

9. Incorporates health teaching as an ongoing part of nursing care.

10. Recognizes the patient's and family's right to privacy and maintains confidentiality with regard to all personal information.

D. Technical Skills: The graduate adapts procedures to meet the patient's needs and uses a variety of equipment safely and with little assistance.

1. Administers or assists the patient with all forms of personal hygiene.

2. Administers heat and cold safely.

3. Provides for elimination through modified natural means -- bedpan, urinal, bedside commode.

4. Provides for bowel elimination through use of enema or suppository.

5. Provides care for patients with ostomies: stoma care, irrigation, application of appliances.

6. Provides for urinary elimination by catheterization, insertion of Foley retention catheter, bladder irrigation.

7. Maintains urinary drainage devices -- straight drainage, Kelly drip irrigation.

8. Accurately measures vital signs: temperature, radial and apical pulse, respiration, blood pressure, and neurological signs, fetal heart sounds.

9. Positions patients for comfort, prevention of pressure sores, correct alignment.

10. Maintains established traction.

11. Operates stryker frame safely.

12. Promotes nutritional and fluid intake by oral means, or gastric feedings by levin or gastrostomy tube.

13. Inserts a levin tube and can establish and maintain gastric suction.

14. Assists with the establishment of intravenous therapy.

15. Assists with nutritional and fluid intake through maintenance of intravenous therapy.

16. Administers medication -

    a) oral
    b) sublingual
    c) rectal
    d) topical
    e) vaginal
    f) parenteral - intramuscular
                  - subcutaneous
    g) instillation of medications - eye
                                   - ear
                                   - nose
                                   - bladder
    h) instillation of medications - nebulizer
       (with additional instruction and experience
       can administer medications intravenously)

17. Establishes and maintains oxygen therapy via: nasal cannula, catheter, mask, croupette, and incubator.

18. Establishes and maintains devices used to administer high humidity: Puritan steam, croupettes, Walton humidifier.

19. Performs mouth-to-mouth resuscitation and can use the Ambu bag.

20. Performs external cardiac massage.

21. Inserts an oral airway.

22. Assembles necessary equipment for establishment of endotracheal intubation.

23. Maintains an adequate airway.

24. Maintains chest suction and drainage techniques

25. Provides care for patients with established endotracheal and tracheal tubes.

26. Assists with diagnostic techniques - e.g., lumbar puncture, endoscopy, preparation for X-ray, collection of specimens of body secretions.

27. Establishes and maintains isolation precautions.

28. Maintains sterility in handling sterile equipment.

29. Removes and applies wound dressings.

30. On direction from physician, can shorten and remove penrose drains, remove sutures and clips.

May 1975

APPENDIX D

BRANDON GENERAL HOSPITAL SCHOOL OF NURSING

DIPLOMA NURSING PROGRAM*

OBJECTIVES

The Graduate:

1. Uses the nursing process in giving direct nursing care to individual patients or groups of patients in a variety of situations.

   a) applies principles derived from the biological and social sciences.
   b) assesses needs based on information obtained from the patient, the family, and other members of the health team.
   c) develops individualized plans of care based on the assessment.
   d) gives and evaluates nursing care which includes dependent-independent-interdependent functions encompassing collaboration and co-ordination.
   e) uses goal-directed communication to establish and maintain satisfactory interpersonal relationships with patients, families, and co-workers.
   f) includes health teaching in daily nursing care based on unique needs of the patient.
   g) uses the resources of the health team and directs the patient or the family to community resources to assist them in meeting immediate and long-term needs.

2. Accepts responsibility for personal competence in performance of nursing skills and techniques.

3. Accepts responsibility for personal and professional growth.

4. Uses leadership skills to improve patient care.

EXPECTED COMPETENCIES OF THE GRADUATE (Revised July, 1980)[1]

The Graduate maintains safe, effective standards of nursing care.

Assessment:

1. Recognizes subtle anticipated and unanticipated changes in a patient's condition and has ideas concerning what a particular group of signs and symptoms might imply.

2. Recognizes the possible consequences of nursing problems and takes relevant action.

3. Establishes priorities in giving nursing care to a group of patients.

Planning:

1. Collaborates with other team members to plan and revise the patient care plan according to changing needs of the patient.

*Revised 1980

[1] Adapted from: Roe, A.K. & Sherwood, M.C. Learning experience guides for learning students. Volumes I-IV. 3rd ed. New York, John Wiley & Sons, 1978.

2. Knows rationale for actions and behavior when giving patient care.

3. Incorporates health teaching as an ongoing part of nursing care.

Implementation:

1. Appears composed in the clinical area and works in a co-ordinated and organized way.

2. Manages the same workload as a staff member.

3. Focuses on the patient's problems and relates in such a way that the patient can solve his/her own problem.

4. Performs technical skills based on principles of safety.

5. Varies performance of nursing skills when the need arises without violating guiding principles.

6. Implements nursing functions in accordance with the policies of the agency.

Evaluation:

1. Keeps team members informed of changes in the patient's condition and care plan.

2. Reports and records information in sufficient detail for clarity, yet concisely enough to avoid non-essential information.

Relationship with Co-workers:

1. Relates to other members of health team comfortably and with no hesitation; asks for help easily.

2. Guides care given by selected members of the health team.

3. Understands how the health team functions.

4. Recognizes own reactions to each team member's individual differences and own ability to accept their differences.

Professional Development:

1. Seeks information from the most appropriate source when requiring resource help.

2. Understands the legal consequences of nursing actions.

3. Assumes responsibility for outcome of own actions.

4. Objectively assesses progress using Unit Co-ordinator and/or staff nurse, teacher, self-evaluation.

5. Maintains and/or increases competencies in nursing.

TECHNICAL SKILLS:*

The graduate adapts procedures to meet the patient's needs and uses a variety of equipment safely with little assistance.

1. Administers or assists the patient with all forms of personal hygiene.

2. Administers heat and cold safely.

3. Provides for elimination through modified natural means -- bedpan, urinal, bedside commode.

4. Provides for bowel elimination through use of enema or suppository.

5. Provides care for patients with ostomies: stoma care, irrigation, application of appliances.

6. Provides for urinary elimination by catheterization, insertion of Foley retention, catheter, bladder irrigation.

7. Maintains urinary drainage devices -- straight drainage, Kelly drip irrigation.

8. Accurately measures vital signs: - temperature, radial and apical pulse, respiration, blood pressure, neurological signs, fetal heart sounds, central venous pressure.

9. Positions patients for comfort, prevention of pressure sores, correct alignment.

10. Maintains established traction.

11. Provides care for patient with stryker frame.

12. Promotes nutritional and fluid intake by oral means, or gastric feedings by levin or gastrostomy tube.

13. Inserts a levin tube and can establish and maintain gastric suction.

14. Assists with the establishment of intravenous therapy.

15. Assists with nutritional and fluid intake through maintenance of intravenous therapy.

16. Administers medications:

    a) oral
    b) sublingual
    c) rectal
    d) topical
    e) vaginal
    f) parental - intramuscular
                - subcutaneous

*June 1977

g) instillation of medications - eye
- ear
- nose
- bladder

h) inhalation of medications - nebulizer
(with additional instruction and experience can instill medications intravenously)

17. Establishes and maintains oxygen therapy via nasal cannula, catheter, mask, croupette, and incubator.

18. Establishes and maintains devices used to administer high humidity: Puritan steam, croupettes, Walton humidifier, I.P.P.B.

19. Performs mouth-to-mouth resuscitation and can use the Ambu bag.

20. Performs external cardiac massage.

21. Inserts an oral airway (except for infants).

22. Assembles necessary equipment for establishment of endotracheal intubation.

23 Maintains and adequate airway by positioning and oropharyngeal suctioning.

24. Maintains chest suction and drainage techniques.

25. Provides care for patients with established endotracheal and tracheal tubes.

26. Assists with diagnostic techniques, e.g., lumbar puncture, endoscopy, preparation for X-ray, collection of specimens of body secretions.

27. Establishes and maintains isolation precautions.

28. Maintains sterility in handling sterile equipment.

29. Removes and applies wound dressings.

30. Can shorten and remove penrose drains, remove sutures and clips.

Example

Terminal Objective 1.s)

The graduate ... applies principles derived from the biological and social sciences.

Medical Microbiology Objective[1]

29. Relate the principles of immunology to the causation and diagnosis of disease.

[1]Pepper, E.H. Medical microbiology - general goals and objectives. 1981 (Unpublished document).

Nursing 101

Objective: Level III, LEG C:

6. Given a list of types of immunization, differentiate between active (and) passive immunity.[1]

Learning Experience: Self-activity related to Objective No. 6:

Look up immunizations you have had. You might find changes in the kinds of vaccines over a period of years. Were they given to provide active or passive immunity?[2]

Learning Experience: Clinical practice related to Objective No. 6:

Attend an immunization program at a local school or health agency. Notice what immunizations are given, how they are recorded, and how they are given.[3]

Test Item related to Objective No. 6:[4]

30. Active immunity is acquired by being immunized with a (an):

1) vaccine
2) antiserum
3) antitoxoid
4) toxoid

a) 1 and 4
b) 2 and 3
c) 1, 2 and 3
f) all of the above

(Brandon General Hospital School of Nursing, 1981)

Nursing 102

Clinical Evaluation: Expected behavior related to concept of needs:

Identifying problems your patient has related to his illness and hospitalization, using basic human needs as a base.[5]

Nursing 201

Learning Experience - related to assessing:[6]

[1] Roe, A.K. & Sherwood, M.C. op cit, Volume I, p. 235.
[2] Roe, A.K. & Sherwood, M.C. op cit, Volume I, p. 236.
[3] Roe, A.K. & Sherwood, M.C. op cit, Volume I, p. 237.
[4] Brandon General Hospital School of Nursing. Level III Test, Nursing 101. 1981 (Unpublished document).
[5] Roe, A.K. & Sherwood, M.C. op cit, Vol. II, p.1.
[6] Ellis, J. & Nowlis, E. Nursing; a human needs approach. Boston, Houghton Mifflin, 1977 (Chapter 5: "The nursing process").

Nursing 202

Objective: Level XIII, LEG B - related to assessing:

8. Given an infant with respiratory distress syndrome, identify five pertinent nursing observations and list essential nursing actions and rationale.[1]

Quiz item - related to objective No. 8:

13. List four pertinent nursing observations of a child with respiratory distress syndrome.[2]

The illustrations provided in examples six and seven are intended to demonstrate how the development of learning objectives has influenced the various aspects of the curriculum design. Similar illustrations could be provided for all of the terminal objectives.

It should be recognized that there are many more course and LEGS objectives and other activities which contribute to the terminal objective in example No. 6. The objective from the medical microbiology course outline is included to ilustrate how the professor from the affiliated institution, Brandon University, has worked with the faculty to develop courses which contribute to the program objectives.

Example

Terminal Objective 1.b)

The Graduate ... assesses needs based on information obtained from the patient, the family, and other members of the health team.

Expected Competency

Assessment related to "obtaining information from a patient".

1. Recognizes subtle anticipated and unanticipated changes in a patient's condition and has ideas concerning what a particular group of signs and symptoms might imply.

Nursing 101

Objective: Level V, LEG A - related to the concept of needs.

2. Observe and record examples of one patient's behavior that demonstrate how illness is affecting the following human needs: physiological safety, love and belonging, esteem and self, actualization

Learning Experience: Group discussion related to Objective No. 2. Discuss Maslow's hierarchy of needs. Which of the needs are physiological and which are nonphysiological? ... Which needs are most apparent?

[1] Roe, A.K. & Sherwood, M.C. op cit, Volume IV, p.213.
[2] Brandon General Hospital School of Nursing. Nursing 201; course materials. 1980 (Unpublished document).

Learning Experience: clinical practice related to Objective No. 2.

Give total nursing care to a patient. Plan your care ahead of time in writing, including nursing interventions which will meet the basic needs: physiological, safety.[1]

[1]Roe, A.K. & Sherwood, M.C. op cit, Volume I, pp. 375, 377-378.

5.2

CASE STUDY NO.2

UNIVERSITY OF THE PHILIPPINES SYSTEMS, COLLEGE OF NURSING,
DILIMAN, QUEZON CITY, PHILIPPINES
COMMENTARY by S. Abrahamson

This case study includes a fine review of the history of university-based nursing education in the Philippines. Of particular interest is the fact that this school, started in 1948, was the first Philippine university school of nursing.

The rapid development of a community-oriented, student-centred, and problem-based curriculum may in large part be due to the fact that so many of the early nurse-teachers were very highly educated with a particular emphasis on studies in education. Indeed, there is a reference to the thesis completed by Julita V. Sotejo at the University of Chicago in 1946, which became the basis for the planning of the school.

Although there was no school philosophy in the early years, new ideas in education began to influence changes in curriculum development in the years 1955, 1964, 1970, and 1975. Students were involved more and more in the planning processes as early as the 1960's. The case study tells us that the educational philosophy shifted during the 60's and 70's from diseases to health problems, a change which obviously made the curriculum reflect more realistically society's needs.

The 1970 curriculum included statements of objectives which involved "action verbs" and which clearly described broad areas of nursing activities or functions (see page 25). A revision in 1978 contained much the same philosophy but showed a move towards formulating objectives even more closely related to nursing tasks.

This evolutionary process of curriculum development can be found in a monograph on competency-based curriculum.[1] This case study contains enough illustrative material from that monograph to enable the reader to judge the extent to which the faculty of that school have indeed:(1) stated objectives meeting the criteria for excellence in that process; (2) developed those objectives from carefully thought-out statements of tasks of the nurse; and (3) used those objectives to design a curriculum which is based on the tasks expected of the graduating nurse in order to provide the services that will meet the health needs of that society. All in all, it is a fine example of that logical process which should be used by all schools of health professions.

More than that, the faculty's adherence to a "developmental approach" in which learning experiences begin with simple problems and then move to more complex problems reflects their application of important principles of learning. All too often in nursing schools and medical schools, learning experiences - particularly in the clinical disciplines - are sporadically difficult: the first challenges as well as the last challenges range from the simplest to the most difficult, according to whatever the "clinical load" is at the time the student is assigned a given problem.

The present curriculum objectives of the College of Nursing are the result of several deliberations. In the early 1970's faculty members returning from study leave abroad participated in sporadic and episodic meetings initiated by the College Secretary.

In 1975, meetings were conducted to merge the three-year School of Nursing of the Philippine General Hospital and the College of Nursing. In these meetings and workshops, the Director of the Philippine General Hospital, the Dean of the College of Nursing, the Principal of the Philippine General Hospital School of Nursing, and all faculty members of both schools chose a theoretical framework to serve eventually as the basis for the curriculum of a new college of nursing.

In 1978, the model on the competency-based curriculum was used by the faculty to analyse the various courses for the following purposes:

1. to minimize overlapping and replication of concepts;
2. to emphasize teaching courses which would help solve the more serious health problems of Philippine society; and
3. to help the teacher in selecting relevant clinical experiences for the students.

In April 1980, the direction of nursing personnel development was sharply brought into focus when the College of Nursing co-sponsored with the Association of Deans and Principals of Philippine colleges and schools of nursing a workshop on the community-based nursing curriculum using the draft of a guide prepared by the World Health Organization for reviewing basic nursing programmes in primary health care. Eventually, courses no longer relevant were deleted; obsolete subject matter was replaced; and new course content was introduced.

These events contributed to the final revision of the curriculum by the Faculty in 1980. This was included in the 1981-82 college catalogue and in the guide on community-based nursing education (see above).

In planning courses and specialization (e.g., nursing service administration) several steps are followed:

1. A core faculty from the four sub-specialties (i.e., medical-surgical, mental heath-psychiatric nursing, maternal and child nursing, and community health may propose abolishing, revising and/or introducing course(s) to the College Curriculum Committee and give the reasons why. This can include: new knowledge gained from seminars, advan- ced studies, research, etc. that could be applied to meet the country's health needs; assessment of courses by both teachers and students; feedback from health workers, patients, and the community; and opinions of graduates. The Committee is composed of one faculty member from each of the sub-specialties, one from the undergraduate programme, and one from the graduate programme; a total of seven, including the chairperson.

2. Once the proposal is approved by the Committee, it is submitted to the Teaching Programme. They discuss the proposal in the light of teaching needs and priorities. Afterwards, the Teaching Programme submits the proposal for approval by the Faculty. Matters like faculty preparation, teaching materials, and finances related to the proposal are discussed further by other faculty members.

3. The College Secretary forwards the proposal for approval to the University Curriculum Committee, composed of one faculty member from each degree-granting unit.

4. Final approval is given by the University Council composed of all faculty members with the rank of assistant professor and above.

5. When approved, the faculty member concerned can introduce the new course.

In very rare instances, courses may not be approved when: course objectives are unclear; there is overlapping of content with existing courses from other units; or a course is not approved because the proposal is incomplete. It is then sent back to the proponent for revision. Then it will once more go through the steps mentioned above.

This process attempts to ensure a relevant curriculum. This seemingly protracted process does not discourage innovation; in fact, the faculty has been conditioned to expect questions from other units.

College of Nursing, University of the Philippines System
Based on an original case study prepared by Dolores M. Recio, Dean, College of Nursing

INTRODUCTION

The University of the Philippines College of Nursing (UPCN) was established in 1948. The recognition of nursing as a profession was the result of several years' effort on the part of far-sighted leaders in the nursing profession.

At that time, the nation was recovering from the devastation of World War II. The economy was improving owing to rehabilitation aid from the United States and reparation payments from Japan. The World Health Organization and the UNICEF were founded in response to the need to solve health problems hindering economic development and to uplift third world countries and partly as an answer to a growing concern over the increase in communicable diseases, especially tuberculosis and gastroenteritis.

An awareness of the need to upgrade and update knowledge and expertise was increasing among health care professionals in the Philippines. Fortunately, the United States provided not only economic aid but also technical assistance and study and travel grants. One of the professions that benefited from these study grants was nursing.

The idea for the College came from a master's thesis entitled A University School of Nursing in the University of the Philippines which Julita V. Sotejo presented to the Division of Biological Sciences of the University of Chicago. An abstract of the thesis, read at a nurses' convention on May 9, 1946, was enthusiastically received and resulted in the passage of a resolution by the Filipino Nurses' Association (now the Philippine Nurses' Association) petitioning for the establishment of a college of nursing at the University of the Philippines.

The Rockefeller Foundation, which has been interested and instrumental in raising the standard of nursing all over the world, promised to help prepare qualified personnel for the proposed college by financing their studies abroad. On August 14, 1947, the Board of Regents of the University of the Philippines favourably endorsed the resolution of the Filipino Nurses' Association to the President of the Philippines.

The College of Nursing received study grants for its faculty and continued to receive such grants for several years. It is this kind of help that has been responsible for the continuing improvement of the nursing curricula.

A few years later, Professor Emeritus Julita V. Sotejo introduced the baccalaureate programme in nursing at the University. Baccalaureate programmes were also instituted in other universities, and in 1980 there were 133 colleges of nursing as distinguished from 60 hospital-based schools of nursing.

In the late 1960's and early 1970's, there was an increase in the number of schools and colleges of nursing owing to job opportunities abroad. As can be expected, the mushrooming of these schools and colleges adversely affected the quality of instruction as well as the quality of education. There were very few qualified teachers and classes were overflowing, sometimes with a hundred or more students in a single class. The lowering of standards was not the only adverse consequence of this phenomenal growth of schools and colleges of nursing. The glut of graduates in the late seventies created another problem - the problem of unemployment. Contributing to this problem was the tightening of qualifications required by employing agencies abroad.

Today, enrolment has declined and many schools of nursing are closing down. At the College of Nursing, the decline in enrolment is partly due to the College Admission Test which weeds out unqualified applicants. During the early years no school philosophy had yet been formulated. However, some of the training did meet the needs of the country at that time and there was an awareness of the need for faculty development.

Over the years, programmes at the college underwent many fundamental changes. Starting from the first four-year curriculum in 1948, four major curriculum changes have taken place: in 1955, 1964, 1970 (five-year programme revised in 1973), and 1975 (four-year integrated programme).

These changes came about in many ways. Nurses returning from graduate study abroad and, later, the establishment of a doctoral programme for nurses at the University introduced new ideas on nursing. Theses and books were being written by nurses on nursing; faculty workshops were held; and Philippine nurses took advantage of exchange programmes with other countries, namely the United States. Concomitantly, a resurgence of interest in Philippine institutions was brought about by historical research and writings. By the late sixties and early seventies, the thinking of the people of the Philippines, and of the Faculty and students of the University, was greatly influenced by rising nationalism. Students began to demand participation in the formulation of decisions and policies affecting them.

Evaluation of the bachelor of science in nursing programme (BSN) by both faculty and students brought about succesive reviews of the curriculum and, subsequently, drastic changes. Nursing research provided more and better knowledge about nursing and this, in turn, was used to develop learning objectives and teaching methods and to plan curricula. A theoretical framework then was developed to make the curriculum a unified whole, and the conceptual approach to teaching shifted from diseases to health problems. Many prerequisite courses borrowed from other disciplines were deleted and the nursing content was enlarged at all levels. The workshop as a method of learning, instead of lectures, was used in many ways; panel discussions were introduced and audio-visual aids developed. Clinical practice was supervised by nurse teachers, and students were given the opportunity to participate in nursing research. Senior students were also encouraged to hold colloquia to discuss curricular matters such as adult education and general education in nursing.

Philosophy, Objectives, Curriculum, and Teaching methods

The College's 1970 curriculum contained the philosophy and objectives of nursing education. This read as follows: "(1) The University of the Philippines College of Nursing, being an integral part of the University of the Philippines, accepts its primary function to be teaching, research, and community service. (2) Its faculty believes its major contribution to society to be direct service to individuals and families at a professional level. (3) The knowledge and skills which the curriculum provides will enable the graduate to function effectively in varied nursing situations through his/her ability to :

(1) assess systematically physiological symptoms and behavioural cues manifested by the patient, in identifying existing or potential problems;

(2) make wise choices and implement the appropriate nursing actions necessary to prevent or resolve patient problems;

(3) understand and appreciate the scientific method and use it in the solution of problems;

(4) understand human behaviour and work effectively with others;

(5) analyse nursing practices and initiate necessary changes in keeping with new developments in nursing, sciences and technology;

(6) maintain and promote the standards of the profession through active participation in professional organizations;

(7) accept responsibility for self-directed activity;

(8) appreciate the baccalaureate program as a basis for advanced study."

In 1978, the revised philosophy of the College of Nursing read in part as follows:

> "...the College believes its main purpose to be:
> (1) to provide opportunities for the student to integrate and utilize knowledge, understanding, and skills from the various fields of learning necessary to the practice of nursing; (2) to facilitate efforts of the students and of the faculty; and (3) to organize and implement extension programs that are relevant to community needs..."

At that time, a description of the BSN programme read:

"This is a four-year course for high school graduates who are qualified physically, emotionally, and intellectually. Admission to the College is selective and limited. The objective of the baccalaureate program is to prepare professional nurses who will work in first-level positions in varied situations."

"...After completion of the baccalaureate program, the graduate is expected to be prepared to:

1. plan for, organize, implement, and evaluate nursing care of individuals, families, and groups;
2. provide leadership in work situations related to nursing and health;
3. work effectively with others; and
4. promote personal and professional growth of self and others...".

The philosophy and objectives of this programme indicated the expanded role of the nurse in terms of concern for health needs in a broader context, such as providing assistance to clients and the community as part of a multidisciplinary effort to achieve health goals.

The Faculty then participated in a workshop which focused on:

- -The country yesterday (politically, socially, economically)
- -The country today
- -What the country will be 20 years from now
- -What the health needs are today and 20 years from now
- -What nursing is today and 20 years from now.

Evidently the intensive work added to the lingering disquietude of the faculty over the students' clamour for more meaningful learning experiences, and they produced in 1981 the monograph "Competency-based curriculum - a model".[2]

Part I of this monograph presents the curriculum for the Bachelor of Science in Nursing degree at the UPCN.

(1) Competency based curriculum

The foreword by Julita V. Sotejo, the preface by Dolores Recio, and the introduction to the above-mentioned monograph describe the process to develop this curriculum model.

The basic questions to be answered were the ones that were asked in Tyler's Basic principles of curriculum construction and instruction.[3].

> (1) What educational purposes should the school seek to attain? (Objectives)
>
> (2) What educational experiences can be provided that are likely toattain these purposes? (Selection of experiences)
>
> (3) How can these educational experiences be effectively organized? (Organization)
>
> (4) How can we determine whether these experiences are being attained? (Evaluation)

In the development of a competency-based curriculum that would be relevant to the country's health problems, many things were considered: the national health goal vis-à-vis the country's health needs; various strategies for delivering health care; and the competencies expected to meet these needs.

The second consideration was based on the conviction that nursing education must be offered in a setting that would provide access to other courses, such as those given at a university. These courses, particularly the behavioural sciences, would help to ensure that the curriculum have a humanistic orientation, admittedly rather superior to a purely technical orientation, and that it would produce a more socially conscious nurse.

The third consideration was how to use the developmental approach to present learning experiences. This approach provides for learning experiences that range from simple ones to more complex ones until the student is able to handle situations that are likely to be encountered by a first-level professional.

A conceptual framework, adapted from the work of Segall and his colleagues and from Bloom,[4] guided the faculty in developing a competency-based BSN curriculum. This framework illustrates the processes involved in the development of the curriculum (see Figure 1).

This curriculum is based on the country's health problems, health goals, pertinent health care strategies, and the nursing roles and responsibilities required by the health care system. The nursing process[5] has influenced much of the Faculty's decisions about the nature and scope of the nursing curriculum. The required nursing roles and responsibilities form the basis of the competencies expected of the graduates and of the students at various stages in the teaching/learning process. The instructional activities and the evaluation of student performance complete this process to achieve the goal of nursing education: satisfaction of student, faculty, and client needs.

This model reflects an inter-relationship among the component parts. The results of the evaluation process can be applied to modify and/or reinforce health care strategies and the curriculum to achieve the health goal by reducing or controlling health problems.

The components reflected in the framework are discussed here in detail to illustrate how each one affected the content of the various courses described and analysed in this monograph.

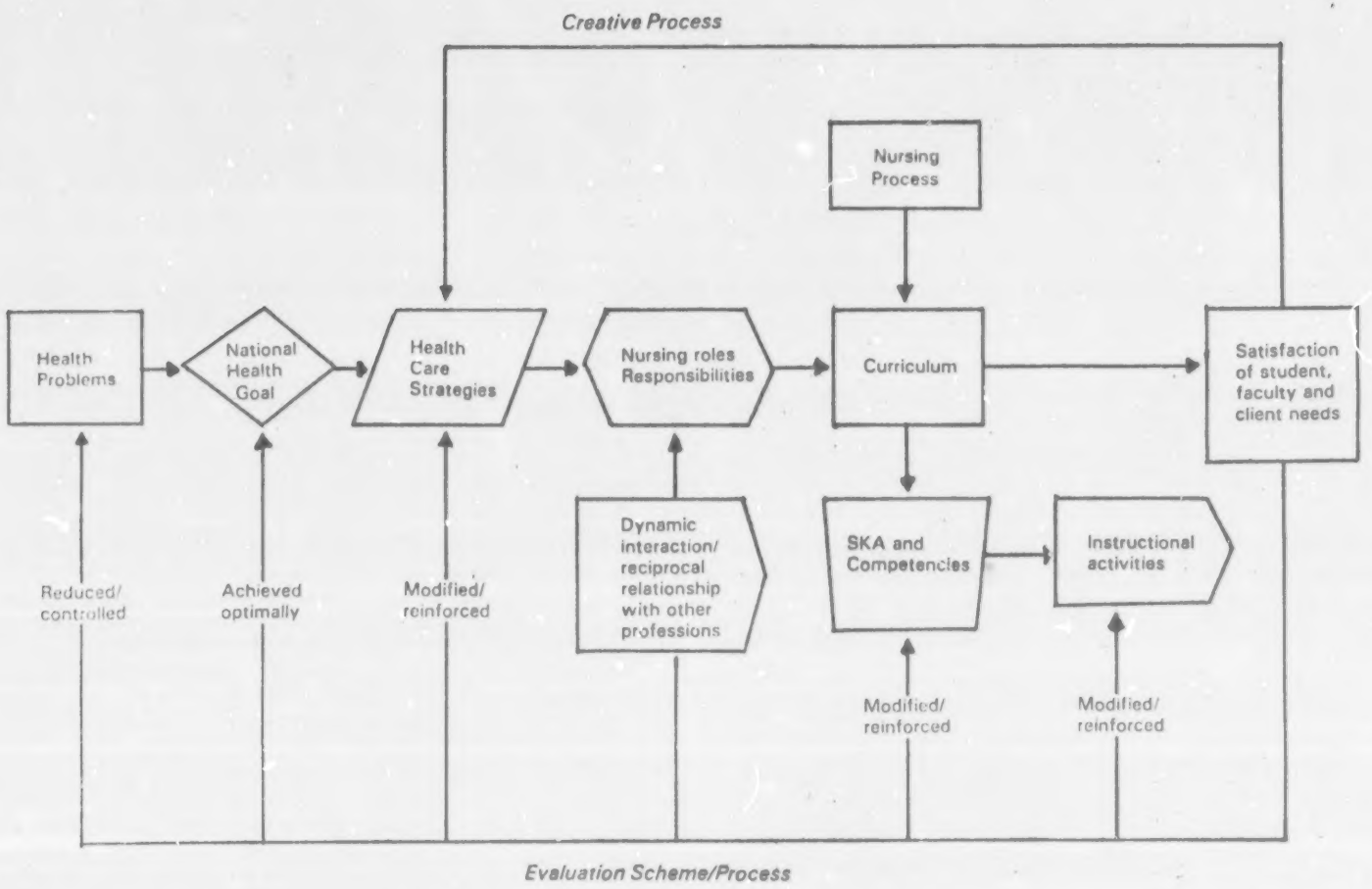
1.1 Health, Problems, Goal, and Strategies

The skills, knowledge, and attitudes defined in each course take into consideration the health problems of the country. The curriculum is designed to develop the necessary competencies in the future professional nurse so that he/she can effectively manage nursing problems associated with communicable diseases, malnutrition, poor environmental sanitation, rapid population growth, and maldistribution of health-manpower, etc.

The nursing profession can contribute much to attain the country's health goal by developing the capabilities of individuals, families, groups, and communities to effectively cope with problems. The achievement of the health goal requires strategies that utilize available resources to the maximum. One major resource in the country is people. The principles of primary health care help describe the most important ways to utilize people so that they can become actively involved in promoting and maintaining health, and in preventing and treating disease.

The different courses of the programme also aim to equip the future professional nurse with the necessary competencies to establish effective working relationships with clients and with other members of the health team. Through courses in behavioural sciences, an understanding of behaviour in health and illness of different clients (i.e., individual, family, group, community) can help the student explore better ways to encourage people to accept responsibility for their health. A background in communication theory and processes provides the student with the skills to develop an active nurse-client relationship. Courses on nursing interventions help the student to develop better ways of providing nursing care through a good background in the patho-physiological processes of illness. Through skills in physical assessment, the student is prepared to diagnose and promptly treat/manage problems. The curriculum also offers learning experiences in the organization/management of resources and in the analyses of antecedents of diseases and the consequences of adopting new measures. The entire curriculum is, therefore, directed towards preparing nurses to help various types of clients to develop better ways of handling health-related problems and conditions or situations, whether in the community or in the hospital setting.

FIGURE 1. CONCEPTUAL FRAMEWORK FOR A COMPETENCY-BASED B.S.N. CURRICULUM



1.2 Nursing Roles and Responsibilities (General goals)

The objectives of the BSN programme have been analysed in terms of their relevance to the country's health problems, goals, and strategies. The graduate of this programme is expected to assume a first-level position, either in a community or hospital setting as a public health nurse, a school nurse, a clinic nurse or a staff nurse. The following are considered his/her professional responsibilities, which reflect his/her contribution to solve health problems.

1. Utilizes the nursing process in the care of individuals, families, groups, and communities.
   a) Assesses with the client his/its condition to identify existing and potential problems.
   b) Plans and implements with the client appropriate nursing interventions/programmes for identified problems.
   c) Evaluates with the client his/its progress and outcomes of care.

2. Ensures a well-organized and accurate recording and reporting system of patient records.
3. Shares leadership; relates effectively with others in work situations related to nursing and health.
4. Promotes personal and professional growth for self and others.

These responsibilities imply the use of the nursing process as a problem-solving methodology and as a way to prepare nurses who can relate effectively with others, make decisions, organize activities to solve or help solve health problems, and innovate ways to deliver better health care.

2. Nursing Curriculum

The professional responsibilities of a BSN graduate were used as the basis of the nursing curriculum. These responsibilities then became course objectives and were stated in terms of what the student would be able to do at the end of each course to perform these professional responsibilities upon completion of the BSN programme. The faculty was divided into work groups and undertook the task of developing each of the courses in the BSN curriculum. For the first part of the curriculum, the following steps were undertaken:

2.1 Delineation of the skills (intellectual and manual), attitudes, and knowledge that correspond to professional responsibilities within the scope and purpose of each of the courses in the curriculum.

The skills refer to both the cognitive (intellectual) and motor (manual) abilities or tasks expected of a practitioner that make up the professional profile. The attitudes simply reflect the affective aspects that are part of the performance of the tasks. They are stated in terms of what the practitioner should be able to show to reflect proper attitudes towards a responsibility. The knowledge component specifies the information needed to perform the required skill or to show the proper attitude.

These components of every responsibility are limited to the scope and purpose of the course. This means that the abilities expected of a practitioner are determined by the objectives of the course, the level and background of the students, the setting, the resources available, and the existing constraints. Given a course in a particular setting with limited resources, what skills and attitudes can a practitioner be expected to demonstrate, using the knowledge he has gained from the course?

2.2 Defining the professional and student competencies

The professional and student competencies reflect the performance expected of the practitioner and the student, taking into account the circumstances under which they will work.

The student competencies may be classified as entry (expected at the beginning of the course), intermediate (expected at various points during the course), and terminal (expected at the end of the course) competencies. Only the terminal and intermediate competencies were formulated because the terminal competencies of previous courses were considered to be the entry competencies of a succeeding course.

In defining terminal student competencies, it was first necessary to determine the professional performance or skills expected of a practitioner under actual work conditions. Since this performance is the result or product of the practitioner's formal education, refined by his years of experience, the student may not always be expected to demonstrate the same level of competence as the practitioner. This necessitates the consideration of certain factors such as the student's background, the resources available in the instructional setting (which will determine the extent to which actual work conditions and performance may be simulated), and the situation under which he/she will be tested (evaluation of student competencies).

Thus, professional and student competencies may not differ entirely or may differ either in the condition or performance. For example, a practitioner may be expected to exhibit a certain performance in an actual client-nurse situation, while a student may only be able to exhibit the same performance in a simulated situation if the course cannot provide actual situations for the student's learning experiences. On the other hand, the student may be provided the same situation that a practitioner encounters in his work, but may only be expected to perform at a level of performance lower than that of a practitioner.

The intermediate competencies represent those the students will have to demonstrate to enable him to attain the terminal competencies. As such, they reflect lower levels of performance as compared to terminal competencies (see examples in Appendices I, II, and III).*

*

CONCLUSION

The importance of stating explicitely in behavioural terms student competencies (what the student will be able to do at the end of an instructional period) cannot be overempnasized. Objectives provide the direction for instruction and the means to measure its effectiveness. Only when the teacher knows what behaviour he expects of his students can he determine the appropriate learning experiences to achieve this behaviour and whether he has succeeded in effecting this desired behaviour.

The monograph we have referred to is a guide for teachers in nursing. It may also be used as a guide by students in their various courses. In effect, there will be clear-cut expectations of the teacher and the student. Self-guidance is emphasized, overlapping is controlled to the minimum, and basic concepts are all indicated.

The faculty is now working on Part II of this monograph; it will focus on instructional activities and methods of assessing student learning.

The goal of nursing education is the satisfaction of client, student, and faculty needs; the student's fulfillment of learning objectives, the faculty's sense of fulfillment from effective instruction, the graduate's effective performance of his professional responsibilities; and, ultimately, the client's satisfaction through better nursing care.

*

* Appendix I : Behavioural Foundations in Health and Illness (N-2)
Appendix II : Pathophysiology (N-4)
Appendix III : Nursing Interventions I, II, III, (N-105, 107, 109)

REFERENCES

[1]Competency-based curriculum; a model. Quezon City, University of the Philippines College of Nursing, 1981.

[2]Ibid.

[3]Tyler, R.W. Basic principles of curriculum construction and instruction. Chicago, University of Chicago Press, 1969.

[4]Segall, A.J. et al. Systematic course design for the health fields. New York, Wiley, 1975.
Bloom, B.S., ed. Taxonomy of educational objectives; the classification of educational goals. Handbook I: Cognitive domain. New York, David Mc Kay, 1956.

5 "The nursing process is a term applied to a system of characteristic nursing interventions in the health of individuals, families and/or communities. In detail, it involves the use of scientific methods for identifying the health needs of the patient/client/family or community and for using these to select those which can most effectively be met by nursing care; it also includes planning to meet these needs, provide the care and evaluate the results". From: The Nursing Process; report on the Advisory Group, World Health Organization Regional Office for Europe, Nottingham, 14-17 December 1976 (Unpublished document).

APPENDIX I
Page 1

BEHAVIORAL FOUNDATIONS IN HEALTH AND ILLNESS (N-2)

SKA COMPONENTS OF THE PROFESSIONAL RESPONSIBILITY

Responsibility 1. Utilizes the anthropological, psychological and sociological concepts and principles in the care of the individual, family or community.

Skills	Knowledge	Attitudes
1. Derives implications of anthropological concepts and principles for health and illness	Anthropological perspectives 1. Biological or evolutionary history of man and the universals of culture 2. The living world: determinants of health and threats to health; global; Philippine situation 3. Philippine institutions: birth, marriage and death; socialization processes 4. Kinship and population: their role in health and illness 5. Universals of Philippine culture: ethnocentrism, cultural relativity, dynamics of culture change	Accepts the "psychic unity" of man and differences only in degree Appreciates the importance of culture, kinship and population in the health of individuals and the country
2. Analyzes individual behavior in health and illness, utilizing psychological concepts and principles 3. Applies psychological principles in effecting behavior change	Psychological approaches to the study of man: neurological, behavioral, cognitive, psychoanalytic and humanistic The Behaving Organism 1. Central nervous system and mental apparatus 2. Sensation and perception: sensory basis of perception: principles of perception 3. Altered state of consciousness (hypnotic state) 4. Learning, thinking and remembering: classical and operant conditioning; principles of reinforcement; cognitive process; language and thought, memory and forgetting 5. Motivation and emotional behavior: (dynamics of motivation) basic human needs/drives; attitudes, beliefs, prejudices 6. Conflict, adjustment and mental health: frustation, anxiety and defense mechanisms; psychological reactions to stress;	Accepts the importance of psychological concepts in the care of patients and families

	personality and its assessment. Practices enhancing mental health: self-awareness; therapeutic use of the self; the self and the group Communication processes Techniques of interviewing Interpersonal relationship	
4. Analyzes sociological concepts and principles as they relate to the total human development perspective	Sociology of health: total human development 1. history, philosophy, rationale 2. elements: social, political, economic, spiritual, physical 3. dimensions: intrapersonal, transpersonal, societal 4. approaches/models: social development, political development, etc.	Accepts the concept of health from the perspective of total human development and its consequent holistic approach in the delivery of health care
5. Analyzes the behavior of population groups and the community in health and illness, utilizing sociological concepts and principles	Sociology of illness 1. concept of disease 2. disease as ideology 3. social elements in the etiology and distribution of illness 4. organization of response to illness	
6. Applies basic principles in effecting planned change	Planning of change 1. rationale 2. principles 3. approaches (options for the future): 3.1 fragmented to holistic 3.2 functional/sectoral to basic community/institution-oriented to indigenization 3.3 content to context 3.4 unidisciplinary to multidisciplinary	Realizes the need for partnership with the client system in the planning of change and the provision of health care
7. Analyzes various levels of health care delivery	Levels of health care delivery 1. Primary health care 2. Secondary and tertiary health care - the hospital system	
8. Analyzes the mechanism involved in health care delivery	The health care system: structural and functional bases; nursing in the health care system	

Responsibility 2. Utilizes anthropological, psychological and sociological concepts/principles in sharing leadership/relating effectively with others in work situations related to nursing and health.		
1. Utilizes psychological concepts/principles in improving relationship with others 2. Analyzes the differences in orientation to role of various health occupational groups	Psychological concepts/principles applicable to interpersonal relations Healing occupations: sociolization into occupational/professional roles (the physician, nurse, other paramedical roles)	Accepts differences in orientation to role of various health occupational groups
Responsibility 3: Utilizes anthropological, psychological and sociological concepts/principles in promoting personal and professional growth for self and others.		
1. Utilizes opportunities for promoting personal growth and adjustments 2. Explains the importance of professional growth in meeting one's need for recognition and self-fulfillment	Promoting personal and professional growth: opportunities, approaches Dynamics of motivation: recognition and self-fulfillment	Accepts the importance of personal and professional growth for one's self-fulfillment

PROFESSIONAL COMPETENCIES	
Condition	Performance
GIVEN appropriate opportunities in actual work situations	The Practitioner: 1. Derives implications of anthropological concepts/principles for health and illness 2. Analyzes individual behaviors in health and illness, utilizing psychological concept/principles 3. Applies psychological principles in effecting behavior change 4. Analyzes sociological concepts and principles as they relate to the total human development perspective 5. Analyzes the behavior of population groups and the community in health and illness, utilizing sociological concepts and principles 6. Applies basic principles in effecting planned change 7. Analyzes various levels of health care delivery 8. Analyzes the mechanism involved in health care delivery 9. Utilizes self-awareness in improving relationships with others 10. Analyzes differences in orientation to role of various health occupational groups 11. Utilizes such opportunities for promoting personal growth and adjustment 12. Explains the importance of personal and professional growth in meeting one's need for recognition and self-fulfillment

TERMINAL COMPETENCIES	
GIVEN anthropological concepts and principles GIVEN psychological concepts and principles	The Student: 1. Derives implications of such concepts/principles for health and illness 2. Explains how such concepts/principles may be utilized in analyzing individual behavior in health and illness 3. Illustrates with specific examples how such principles may be utilized in effecting behavior change
GIVEN sociological concepts and principles	4. Relates such concepts/principles to total development 5. Explains how such concepts/principles may be utilized in analyzing the behavior of population groups and the community in health and illness
GIVEN basic principles relating to planned change	6. Illustrates with specific examples how such principles may be utilized in effecting planned change in the community
GIVEN relevant questions	7. Explains various levels of health care delivery 8. Describes the mechanism involved in health care delivery 9. Explains how self-awareness may be utilized in improving relationships with others 10. Compares/differentiates orientation to role of various health occupational groups 11. Explains the importance of personal and professional growth in meeting one's need for recognition and self-fulfillment

INTERMEDIATE COMPETENCIES	
GIVEN relevant questions	The Student: (Anthropological foundations in health and illness) 1. States the principal elements of man's evolutionary history 2. Describes man's mechanisms for physical and social adaptation 3. Identifies the universals of culture and its manifestations in Philippine society 4. Explains the dynamics of culture change 5. Compares socialization processes in different societies 6. Explains the relationship of social and ecological factors to health and illness 7. Relates kinship and population patterns to the Philippine health situation
GIVEN relevant questions GIVEN an experience in altered state of consciousness GIVEN relevant questions on learning and problem-solving GIVEN relevant questions on motivation and emotional behavior GIVEN relevant questions on adjustment behavior GIVEN an experience in group dynamics GIVEN relevant questions on the communication process	(Psychological foundations in health and illness) 1. Describes five psychological approaches to the study of man 2. Explains the basic organization and role of the central nervous system in human behavior 3. Identifies the sensory processes involved in human behavior 4. Describes the different viewpoints of perception 5. Describes the experience in such a state 6. Cites some techniques for inducing such a state 7. Describes the processes of classical and operant conditioning, giving several examples of each 8. Distinguishes between operant and respondent behavior in relation to principles of reinforcement 9. Enumerates some techniques for measuring memory and improving retention 10. Explains the relationship between languages and thought as related to concept formation 11. Cites/illustrates different approaches to the study of motivation 12. Compares different theories of emotion 13. Explains the contribution of psycho-analysis, both as a dynamic and a developmental theory, to the understanding of personality 14. Gives examples of frustation and types of conflict 15. Explains the concept of anxiety and psychological reactions to stress 16. Gives examples of coping mechanisms 17. Explains the ways in which coping mechanisms may hinder or help satisfactory adjustment 18. Discusses the following concepts: 18.1 self-discovery in a group 18.2 therapeutic use of the self 19. Describes the components of the communication process 20. Enumerates the types of communication

GIVEN the basic ingredients of a harmonious relationship	21. Illustrates by specific examples the characteristics of effective communication 22. Relates such ingredients to one's own personal experiences with various individuals/groups 23. Derives implications of a harmonious working relationship with others from said experiences
GIVEN relevant questions	(Sociological foundations in health and illness) 1. Explains the concept of total human development as the ultimate goal of life 2. Illustrates with specific examples the interrelatedness of socio-economic and politico-cultural influences in health/illness of the individual, family, population group and community 3. Describes sociological dimensions related to health in the context of total human development 4. Explains concepts of health and illness underlying the health-seeking behavior of clients 5. Explains the need for planned change in bringing about total human development 6. States the basic principles in effecting planned change in relation to the subject/client, innovation and method 7. Differentiates the various approaches for planned change 8. States the purpose and features of 8.1 primary health care 8.2 secondary health care 8.3 tertiary health care 9. States the factors influencing role perceptions of various health occupational groups 10. Describes the structural and functional bases of the health care delivery system 11. Identifies the position of nursing in the health care system

COURSE TITLE: PATHOPHYSIOLOGY (N-4)

DESCRIPTION: Concepts/theories/facts about disease formation and the scientific rationale behind signs and symptoms

PURPOSE: To enable the student to acquire basic knowledge, attitudes and skills related to the pathophysiological basis of common health problems

STUDENTS: Second year nursing students in the first semester

SETTING: U.P. College of Nursing classroom

RESOURCES:
1. One faculty member
2. Adequate library facilities
3. Textbook on physiology, pathophysiology
4. Audio-visual facilities - movie projector, overhead projector, slide projector

CONSTRAINTS: None

PROFESSIONAL RESPONSIBILITY:

1. Utilizes pathophysiological concepts/theories/facts in the nursing care of individuals.

SKA COMPONENTS OF THE PROFESSIONAL RESPONSIBILITY

Skills	Knowledge	Attitudes
1. Utilizes an integrated approach in explaining the diseases process	Overview of disease as a dynamic process involving disruption of one or more normal physiological process Homeostasis Natural history of a disease process	Accepts the importance of viewing the disease process as involving/ affecting the body as a whole organized unit
2. Analyzes the possible etiologic factors involved in common disease conditions	General etiologic factors in disease Genetic factors Physical agents Chemical agents Biologic agents Hypersensitivity and autoimmunity Aging/degenerative process Psychosomatic factors	
3. Describes disruptions in the principal body homeostatic mechanisms	Altered regulatory functions affecting the various body systems	
4. Explains the possible scientific rationale for representative signs and symptoms of disease conditions related to the different body systems	Nervous system: disturbances of sensory, motor and higher nervous system function Endocrine system: problems of growth and sexual development; other endocrine disorders Cardiovascular system: palpitation and tachycardia; syncope, circulatory collapse and shock; peripheral vascular disease problems; hypertension; pericardial disease, congenital heart disease, valvular disease, congestive heart failure Respiratory system: cough, dyspnea, hypoxia, cyanosis, etc. Urinary system: disturbances of acid base balance, abnormal urine constituents, abnormalities in urine output and micturition, edema, nephrotic syndrome, uremia Gastro-intestinal system: malnutrition, malabsorption, diarrhea, constipation, jaundice Reproductive system: menstrual disorders, abnormalities in pregnancy, inflammatory conditions, neoplasm Integumentary system: keratosis, epithelioma, systemic lupus, erythematosus.	

PROFESSIONAL COMPETENCIES

Condition	Performance
GIVEN any disease condition and relevant data	The Practitioner: 1. Utilizes an integrated approach in explaining the disease process 2. Analyzes the possible etiologic factors involved in such condition 3. Describes the particular disruption in the principal body homeostatic mechanisms involved in such condition 4. Explains the possible scientific rationale for such condition or its representative signs/ symptoms

TERMINAL COMPETENCIES

GIVEN a common disease condition and relevant data	The Student 1. Explains the disease process, utilizing an integrated approach 2. Analyzes the possible etiologic factors involved in such condition 3. Describes the particular disruption in the principal body homeostatic mechanisms involved in such condition 4. Explains the possible scientific rationale for such condition or its representative signs/ symptoms

INTERMEDIATE COMPETENCIES

GIVEN relevant questions on the concept of homeostasis	The Student: (Concept of homeostasis and natural history of a disease process) 1. Describes the principal body homeostatic mechanisms 2. Illustrates with a diagram the natural history of a disease process
GIVEN relevant questions on genetic factors causing disease	(General etiologic factors in disease) 1. Explains the mechanism of development of hereditary disease in terms of: 1.1 variation in the number of chromosomes 1.2 gene malfunction 1.3 mutation
GIVEN a type of agent (e.g., physical, chemical, etc.) causing disease	2. Gives typical examples of hereditary disease 3. Cites specific examples of each agent 4. Explains the manner in which such agent causes disease 5. Describes manifestations or effects typical of the disease produced
GIVEN relevant questions on immunologically related diseases	6. Explains the mechanism of hypersensitivity and auto-immune reactions 7. Illustrates with specific examples the types of hypersensitivity reactions

	8. Enumerates common characteristics of auto-immune diseases and an example of each
GIVEN relevant questions on the aging process	9. Explains the mechanisms of aging in terms of: 9.1 secular or natural changes 9.2 senescent changes: accelerated aging 9.3 pathologic complications of aging
	10. Differentates primary from secondary aging of tissue
	11. Describes the main features of aging of the: 11.1 ovaries 11.2 nervous system 11.3 skeletal muscle 11.4 cardiovascular system 11.5 skin
	12. Gives examples of the effects of aging in organs/tissues and on mental function
GIVEN relevant questions on psychosomatic factors in disease	13. Differentiates between psychosomatic and mental illness
	14. Explains the machanism of psychosomatic dysfunction
	15. Describes the nature of the body's physiologic defenses against stress
	16. Outlines the sequence of development of maladaptation to stress
	17. Gives common examples of diseases that may be caused by psychosomatic/stress factors
GIVEN relevant questions on neoplasia	18. Describes the development of neoplasm
	19. Differentiates the types of neoplasms
	20. Lists common carcinogens and an example of each
	21. Cites effects typical of neoplasia
	(Control system)
GIVEN a disease condition or its representative signs or symptoms	1. Identifies the possible etiologic factors of the disease condition
	2. Specifies the organs/systems involved
	3. Selects from among alternatives the scientific explanation of the disease condition or the following signs/symptoms: 3.1 neurological - pain, headache, numbness, loss of motor coordination, convulsions, tremors 3.2 cardiovascular - palpitation, syncope, circulatory collapse, shock, arterial hypo/hypertension 3.3 pulmonary - cough, dyspnea, hypoxia, cyanosis, clubbed fingers/toes 3.4 renal - alkalosis, acidosis, dehydration, edema, diuresis, oliguria, anuria, abnormal urine constituents 3.5 endocrice - dwarfism, gigantism, exopthalmos, lethargy, cushing's syndrom, hypogonadism 3.6 gastro-intestinal - vomiting, diarrhea, constipation, jaundice 3.7 reproductive - menstrual disorders, menoposal syndrome 3.8 skin - horny growth, bucterfly rash

APPENDIX III
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COURSE TITLE	NURSING INTERVENTIONS I, II, III (N-105, 107, 109)
DESCRIPTION:	Nursing care of individuals/groups of all ages with pathophysiological and psychosocial disturbances in varied settings
PURPOSE:	To enable the student to integrate/apply knowledge and develop further skills in the nursing care mainly of the individual and secondarily of the family, population group or the community with problems on: 1. Gas exchange/respiration 2. Fluid and electrolyte balance 3. Fluid transport 4. Reproduction — Nursing Interventions I 5. Nutrition and elimination — N-105 - (1-5) 6. Chemical regulation 7. Locomotion 8. Neural regulation — Nursing Interventions II 9. Sensory intake — N-107 - (6-10) 10. Disaster and emergency 11. Psychological adjustment/adaptation — Nursing Interventions III N-109 - (11)
STUDENTS:	N-105 and N-107: third year nursing students in the first and second semesters N-109: fourth year nursing students in the first semester
SETTING:	UP-PGH classrooms/conference rooms Various departments (wards, clinics, etc.) of PGH Barrio Bagong Silangan National Orthopedic and National Mental Hospitals San Lazaro Hospital Other health and health-related community resources
RESOURCES:	1. Faculty members representing the different fields of specialization with one acting as a coordinator for each of the courses 2. Clinical facilities and clients/patients of various hospitals/agencies are utilized for the clinical experiences of the students 3. Classroom facilities include a chalk board, projector (film, overhead, slide) and screen 4. Hand-out materials 5. Library facilities include books, journals, etc. 6. Funds are available for the usual operating expenses of the College
CONSTRAINTS:	1. Patients with various problems are not always available during the duration of the students' clinical experiences. 2. The time allocated for each clinical experience may not provide sufficient opportunities for evaluation of care. 3. Students have to work within the policies/set-up of the hospitals concerned which pose a limit to the provision of certain experiences. 4. There is generally inadequate equipment and supplies for patient care in government hospitals. 5. Rising cost of materials puts a limit to the development and use of audio-visual and hand-out materials.

PROFESSIONAL RESPONSIBILITIES

1. Utilizes the nursing process in the care of individuals, families, population groups and communities.
   - 1.1 Assesses with the client his/its condition to identify existing and potential problems
   - 1.2 Implements with the client appropriate interventions/programs/activities for identified problems.
   - 1.3 Evaluates the progress of his/its condition and outcomes of care.
2. Ensures a well-organized and accurate recording and reporting system.

SKA COMPONENTS OF THE PROFESSIONAL RESPONSIBILITIES		
Responsibility 1.1 Assesses with the client his condition to identify existing and potential problems.		
Skills	**Knowledge**	**Attitudes**
1. Evaluates the health status of the client based on: 1.1 history findings	Significant factors in patient's history related to specific problems (see table 1 for examples)	Accepts the importance of accuracy and thoroughness in taking the client's history and in physical/psychological assessment
1.2 physical assessment 1.3 psychological assessment	Significant physical and psychological findings referrable to common disorders affecting the various body systems (see table 1 for examples)	
1.4 results of diagnostic examination	Significant results of examinations commonly undertaken for specific problems (see table 1 for examples)	
2. Analyzes the health problems and probable reasons/factors contributing to such problems as well as resources available to help solve such problems	Health problems based on the above, probable reasons or contributing factors and available resources for the modification/solution of such problems	
3. Defines the nursing problems	Definition of commonly encountered nursing problems based on reasons/factors/resources identified (see table 1 for examples)	
Responsibility 1.2 Plans and implements with the client the nursing interventions/activities/programs for identified problems.		
1. Assists the client in developing effective coping/adaptive patterns	Techniques/approaches to help client cope with his/its problems (see table 1 for examples)	Accepts: 1. the importance of self-awareness in improving adaptive patterns 2. the client's ability to improve his/its own health condition 3. the client's involvement in his own health care
2. Provides for the specific needs of the client related to: 2.1 biological aspects 2.2 psycho-social aspects	Nursing interventions for specific needs (see table 1 for examples) related to: Nutrition Comfort/hygiene Safety/prevention of complications Psychosocial aspects	Accepts the importance of holistic/comprehensive approach to patient care

3. Administers prescribed medications and treatment	Medications and treatments commonly prescribed for specific disorders (see table 1 for examples): modes of action, therapeutic uses, common side effects, known contraindications, special precautions to be observed in administration of various drugs: method of administration of common preparations of such drugs: common sources of errors or problems related to incorrect dosages and their computation: ways of checking on correctness of dosage/computation	
4. Implements the plan for the client's discharge, follow-up or home care	Follow-up and home care considerations for specific disorders (see table 1 for examples)	
5. Mobilizes resources/makes appropriate referrals for continuity of care	Resources (individual, family, community) which may be mobilized or utilized for the care of clients with specific disorders/problems	
Responsibility 1.3 Evaluates with the client the progress of his/its condition and outcomes of care.		
1. Evaluates the client's responses to therapy/nursing interventions 2. Makes the necessary modifications/changes in nursing interventions	Criteria in evaluating client's response to therapy/intervention based on objectives of care. Alternative nursing approaches for specific problems	Accepts the importance of evaluating the effectiveness of nursing intervention and of creativity/resourcefulness in modifying nursing actions
Responsibility 2. Ensures a well-organized and accurate recording and reporting system.		
Records accurately, using a standard format, significant findings/observations/problems/interventions	Standard format of recording and reporting in various clinical areas; use of the problem-oriented record (POR) in specific disorders	Accepts the importance of records and reports for effective nursing care

PROFESSIONAL COMPETENCIES

Condition	Performance
GIVEN an individual with a pathophysiological problem or a client (individual, family, group or community) with problems in psychological adjustment	The Practitioner: 1. Evaluates the health status of the client based on: 1.1 history findings 1.2 physical and psychological assessment 1.3 results of diagnostic examinations

	2. Analyzes the health problems and probable reasons/factors contributing to such problems as well as the resources available to help solve such problems 3. Defines the nursing problems 4. Assists the client in developing effective coping/adaptive patterns in relation to the problems 5. Provides for the specific needs of the client related to: 5.1 nutrition 5.2 comfort 5.3 hygiene 5.4 safety 5.5 prevention of complications 6. Administers prescribed medications and treatments 7. Implements the plan for the client's discharge, follow-up and home care 8. Mobilizes resources/makes appropriate referrals for continuity of care 9. Evaluates the client's response to therapy/nursing interventions 10. Makes the necessary changes/modifications in nursing interventions 11. Records accurately, using the standard format, significant findings, observations, problems and/or interventions
GIVEN appropriate forms and the standard format in recording	
TERMINAL COMPETENCIES	
GIVEN an individual with a pathophysiological problem or a client (individual, family, group or community) with problems in psychological adjustment	The Student: 1. Evaluates the health status of the client based on: 1.1 history findings 1.2 physical and psychological assessment 1.3 results of common diagnostic examination 2. Analyzes health problems and probable reasons/factors contributing to such problems as well as resources available to help solve such problems 3. Defines the nursing problems 4. Assists the client in developing effective coping/adaptive patterns 5. Provides for the special needs of the client related to: 5.1 nutrition 5.2 comfort 5.3 hygiene 5.4 safety 5.5 prevention of complications 6. Administers prescribed medications and treatments 7. Implements the plan for the client's discharge, follow-up or home care 8. Mobilizes resources/makes appropriate referrals for continuity care

GIVEN adequate opportunities GIVEN appropriate forms	9. Evaluates the client's response to therapy/ nursing interventions 10. States the necessary modifications/changes in the plan of care based on evaluation results 11. Records accurately, using the POR, significant findings/observations/problems/interventions
INTERMEDIATE COMPETENCIES	
GIVEN a simulated or actual situation GIVEN relevant questions	The Student: (Problems on gas exchange) 1. Identifies deviations from normal based on physical assessment of the respiratory system: 1.1 inspection - shape and contour of chest, symmetry, antero-posterior (AP) diameter, nasal flaring; use of accessory muscles of respiration 1.2 palpation - symmetry of expansion, tactile fremitus 1.3 percussion - degree of resonance on different areas of the chest 1.4 auscultation - abnormal and adventitious breath sounds, abnormal voice sounds 2. States the purpose and nature of the following diagnostic examinations: 2.1 bronchoscopy and bronchogram 2.2 pulmonary function tests - spirometry 2.3 thoracentesis 2.4 blood gases determination 3. Describes the general physical and psychological preparation and care of patients undergoing the above diagnostic procedures 4. Interprets results of relevant skin tests 5. Defines/distinguishes the following specific conditions/problems on gas exchange: 5.1 impaired ventilation due to airway obstruction, restrictive defects and respiratory center damage or depression 5.2 impaired diffusion and gas exchange-fibrosis, pulmonary edema, obliterative pulmonary vascular disease, anatomic loss of lung tissue 5.3 ventilation - perfusion abnormalities and venous admixture 5.4 specific disease conditions - pulmonary tuberculosis, pneumonia, asthma, chronic bronchitis, emphysema, lung cancer 6. Enumerates the causes/common contributing factors to the above conditions 7. Identifies the signs and symptoms characteristic of the above disorders 8. Selects from among alternatives the patho-physiologic explanation for selected signs/syptoms/ conditions

GIVEN common drugs in the treatment of respiratory disorders	9. Matches these with their corresponding action/ therapeutic use 10. Lists common side effects and known contra-indications, if any
GIVEN common surgical procedures employed in respiratory disorders	11. Outlines the nature and indication of such procedures 12. Explains the general principles involved in the care of patients: 12.1 with closed chest drainage 12.2 with tracheostomy 12.3 who underwent chest surgery 12.4 with mechanical respiratory aid 12.5 on blow-bottle exercises
GIVEN specific situations/conditions	13. Specifies the: 13.1 major complications of the condition 13.2 appropriate nursing intervention for the condition 13.3 rationale for the nursing intervention
GIVEN an actual situation	14. Demonstrates skill in: 14.1 administering oxygen inhalation by nasal catheter, cannula or ventri-mask 14.2 proper suctioning of secretions thru the endotracheal or tracheostomy tube 14.3 administering inhalation therapy by means of a nebulizer and respirator 14.4 administering bronchial hygiene measures with increased confidence
GIVEN a patient in an actual or simulated situation	(Problems on fluid and electrolyte balance) 1. Identifies deviations from normal based on the following baseline measurements and techniques of physical assessment: 1.1 baseline measurements - weight, temperature, pulse, respiration, blood pressure 1.2 inspection - general hydration, coordination and perception, severity of burns 1.3 palpation - skin turgor, temperature, texture, presence of edema, fluid in peritoneal cavity, bladder distention 1.4 percussion - degree of resonance in chest, presence of fluid in abdomen, abnormal reflexes 1.5 auscultation - abnormal breath/voice sounds, presence of increased fluid in abdomen, arrythmias
GIVEN relevant questions	2. States the purpose and normal values of the following laboratory examinations: 2.1 serum electrolytes 2.2 hematocrit 2.3 urine Sulkowitch test 2.4 arterial blood gases 3. States the purpose and nature of the following diagnostic procedures: 3.1 kidney biopsy 3.2 kidney-urinary bladder-intravenous pyelography (KUB-IVP) 3.3 24-hour urine volume determination 3.4 aortography 3.5 renogram

	4. Describes the physical and psychological preparation and care of patients undergoing the above procedures 5. Correlates serum potassium level with electrocardiogram findings 6. Defines/distinguishes the following specific defects/imbalances in fluids and electrolytes: 6.1 isotonic depletion and excess 6.2 hypotonic and hypertonic syndrome 6.3 hypo and hyperkalemia 6.4 hypo and hypercalcemia 6.5 hypo and hypermagnesemia 6.6 respiratory acidosis and alkalosis 6.7 metabolic acidosis and alkalosis 7. Enumerates the normal regulators, regulatory defects and causes of the above imbalances 8. Explains the pathophysiology of the following conditions and selected signs/symptoms: 8.1 burns 8.2 acute renal failure 8.3 chronic renal failure
GIVEN a list of drugs used in the treatment of burns and renal failure	9. Matches these with their corresponding action/ therapeutic use 10. Lists common side effects and known contraindications, if any
GIVEN relevant questions/situations	11. Explains the general principles in the care of patients: 11.1 with peritoneal dialysis 11.2 with hemodialysis 11.3 for KUB surgery 11.4 with urinary diversion 11.5 with burns 11.6 for bladder training
GIVEN specific situations/conditions	12. Specifies the: 12.1 major complications of the condition 12.2 appropriate nursing intervention 12.3 rationale for the intervention
GIVEN an actual situation	13. Demonstrates skill in: 13.1 hourly urine measurement 13.2 urethral catheterization 13.3 care of the patient with an indwelling catheter 13.4 care of a patient with intravenous fluid therapy
GIVEN a simulated or actual situation	(Problems on fluid transport) 1. Identifies deviations from normal, utilizing the following techniques in physical assessment, of the cardiovascular system: 1.1 inspection - estimation of venous pressure, venous pulsations 1.2 palpation - rate, rhythm, contour, amplitude, equality of arterial pulses, presence of abnormal vibrations, pulsations or gallops in the precordium and point of maximal impulse 1.3 percussion - cardiac borders to locate dullness 1.4 auscultation - aortic, tricuspid, mitral and pulmonary areas to detect abnormal heart sounds and murmurs

GIVEN relevant questions	2. Defines/distinguishes the following cardiovascular disorders: - Cardiac problems 2.1 inflammatory - rheumatic fever, endocarditis, myocarditis, pericarditis 2.2 congenital - patent ductus arteriosus, septal defect, pulmonary stenosis, coarctation of the aorta, Tetralogy of Fallot 2.3 deficiency in blood supply to the myocardium - angina pectoris 2.4 cardiac arrythmias 2.5 specific problems - congestive heart failure, shock, heart disease in pregnancy and in a surgical patient, cardiac failure - Blood vessel problems 2.1 structural disorders - aneurysms, varicose veins 2.2 degenerative - arteriosclerosis, Buerger's disease 2.3 inflammatory - thrombophlebitis, phlebothrombosis 2.4 specific problems - hypertension
	3. Enumerates the causes of/common contributory factors to the above conditions
	4. Identifies the signs and symptoms characteristic of the above disorders
	5. Selects from among alternatives the patho-physiologic explanation for selected disorders/ manifestations
	6. States the significance of deviations from normal referrable to the following examinations: 6.1 blood count 6.2 blood sedimentation 6.3 prothrombin time (PT) 6.4 serum cholesterol 6.5 blood serum protein 6.6 enzyme tests 6.7 arterial blood pressure 6.8 venous pressure 6.9 electrocardiogram (CG, EKG)
	7. Describes the nature and purpose of: 7.1 electrocardiogram ECG, EKG) 7.2 cardiac catheterization
	8. Describes the general physical and psychological preparation and care of patients undergoing the above diagnostic procedures
GIVEN common surgical procedures employed in certain cardiovascular disorders	9. Outlines the principle behind and indications of such procedures
	10. Explains the general principles of care in patients who have undergone such operations
GIVEN a list of drugs used for cardiovascular disorders	11. Matches these with their corresponding action/ therapeutic use
	12. Lists common side effects and known contraindications, if any
GIVEN relevant questions	13. Outlines the general principles of care in patients: 13.1 with rheumatic heart disease 13.2 with myocardial infarction 13.3 with vascular problems

GIVEN specific situations/conditions	14. Specifies the: 14.1 major complications of the condition 14.2 appropriate nursing intervention for such condition 14.3 rationale for the intervention
GIVEN an actual or simulated situation	15. Demonstrates skill in: 15.1 measuring central venous pressure 15.2 applying rotating tourniquet 15.3 assisting in/performing cardio-pulmonary resuscitation of a child and adult 15.4 assisting in/performing electrocardiogram
GIVEN relevant questions	(Problems on hematology) 1. Defines/distinguishes the following hematologic disorders: 1.1 erythrocyte disorders - deficiency anemia, aplastic anemia, hemolytic anemia, polycythemia 1.2 leucocyte disorders - leucocytosis, leukemia, leukopenia, neutropenia, multiple myeloma 1.3 disorders affecting the lymphoid tissue - infectious mononucleosis, Hodgkin's disease, lymphosarcoma 1.4 hemorrhagic diseases - hemophilia, hypoprothrombinemia, thrombocytopenia 2. Enumerates the causes of/common contributing factors to the above conditions 3. Identifies the signs and symptoms characteristic of such disorders 4. Describes their pathologic features. 5. States the significance of deviations from normal values referrable to the following examinations: 5.1 red blood cell count (RBC) 5.2 hemoglobin and hematocrit (Hgb, Hct) 5.3 erythrocyte indices 5.4 reticulocyte count 5.5 leucocyte count (WBC) 5.6 differential leucocyte count 5.7 thrombocyte count 5.8 urinary/fecal urobilinogen 5.9 bone marrow biopsy 5.10 Coomb's test 5.11 coagulation test 6. Explains general principles of care in patients: 6.1 with blood transfusion 6.2 undergoing radiation therapy
GIVEN a list of drugs commonly used for nematologic disorders	7. Matches these with their corresponding action/ therapeutic use 8. Lists common side effects and known contraindication, if any
GIVEN specific situations/conditions	9. Specifies the: 9.1 major complications of the condition 9.2 appropriate nursing intervention for the condition 9.3 rationale for the intervention

GIVEN a list of factors GIVEN relevant questions	(Problems on reproduction) 1. Identifies those contributing to high risk pregnancy and problems relating to the reproductive system and the neonate 2. States the significance of deviations from normal in the following examinations: 2.1 pelvimetry 2.2 amniocentesis 2.3 oxytocin challenge test 2.4 determination of fetal heart decelerations 2.5 determination of direct and indirection bilirubin 2.6 human chorionic gonadotropin titer 2.7 Papanicolau (pap) and other types of smears 2.8 fertility studies 3. States the nature and purpose of the following: 3.1 fetal monitoring techniques 3.2 parturiograph 3.3 cancer staging 4. Describes the general physical and psychological preparation and care of patients undergoing the above procedures 5. Defines/distinguishes the following specific conditions/problems in reproduction and the neonate: 5.1 bleeding problems - abortion, hydatidiform mole, placenta previa, abruptio placenta 5.2 toxemias of pregnancy - preeclampsia, eclampsia 5.3 abnormal presentations - breech, face, shoulder 5.4 inflammatory conditions, including sexually transmitted diseases 5.5 cancer of the different reproductive organs 5.6 common medical and surgical problems during pregnancy - cardiac, renal, endocrine 5.7 problems in the neonate - prematurity, respiratory distress syndrome, hypo/hyperglycemia, hyperbilirubinemia, infection 6. Enumerates the causes of/common contributory factors to the above conditions 7. Explains the pathophysiology of selected disorders/manifestations 8. Identifies the signs and symptoms characteristic of the above disorders
GIVEN common drugs used in the treatment of reproductive disorders	9. Matches these with their corresponding action/therapeutic use 10. Lists common side effects and known contraindications, if any
GIVEN common surgical procedures employed in the treatment of reproductive disorders	11. Outlines the nature and indications of such procedures 12. Explains the general principles involved in the care of patients undergoing such procedures

GIVEN specific situations/conditions	13. Describes general principles of care of the neonate: 13.1 in an incubator 13.2 undergoing phototherapy 13.3 undergoing exchange transfusion 14. Specifies the: 14.1 appropriate nursing intervention for the condition 14.2 rationale for the intervention
GIVEN a simulated or actual condition GIVEN relevant questions	(Problems on nutrition and elimination) 1. Demonstrates the following techniques of/ identifies deviations from normal based on assessment of the gastrointestinal tract and the body's metabolism: 1.1 general perspective of overall nutrition-body-build, stature, fat distribution 1.2 specific assessment of: a. oral cavity b. swallowing c. abdomen i) inspection - skin, vasculature, architecture, movement ii) auscultation - bowel sounds, vascular sounds, friction rubs iii) percussion - gas patterns, area of dullness iv) light palpation - muscular tension, enlarged organs, masses v) deep palpation - masses, rebound tenderness, costovertebral angle, liver, spleen, kidneys, aorta d. anus and rectum i) inspection - irritations ii) palpation - sphincter tone, tenderness, lesions, polyps, mass, prostate (males) 2. States the rationale for performing auscultation before percussion or palpation in assessment of the gastrointestinal system 3. States the significance of determining the costovertebral angle and rebound tenderness in gastrointestinal conditions 4. States the purpose and nature of the following diagnostic procedures: 4.1 gastroscopy 4.2 esophagoscopy 4.3 paracentesis 4.4 proctosigmoidoscopy 4.5 serum enzyme tests 4.6 liver scanning/biopsy 4.7 barium enema 4.8 gastric joice analysis 4.9 upper gastrointestinal (GI) series 4.10 cholecystography 4.11 cholangiography 4.12 liver function tests 4.13 rectal examination 5. Describes the general physical and psychological preparation and care of patients undergoing the above diagnostic procedures

	6. Defines/distinguishes the following specific conditions/problems in nutrition and elimination: 6.1 disturbances in ingestion - malnutrition, protein, vitamin and mineral deficiency 6.2 disturbances in gastric and intestinal digestion - peptic ulcer, gastritis, gastric cancer, hiatus hernia, pancreatitis, malabsorption syndrome 6.3 disturbances in elimination - inflammatory bowel condition, intestinal obstruction, hemorrhoids 6.4 disturbances in hepatic function - liver cirrhosis, viral hepatitis, liver cancer, liver trauma
	7. Enumerates the common causes of/contributing factors to the above conditions
	8. Identifies the signs and symptoms characteristic of the above disorders
	9. Selects from among alternatives the pathophysiologic explanation for selected signs/symptoms/conditions
GIVEN common drugs used in the treatment of gastrointestinal disorders	10. Matches these with their corresponding action/therapeutic use
	11. Lists common side effects and known contraindications, if any
GIVEN relevant questions	12. States the indications, principles and hazards of parenteral hyperalimentation
	13. Enumerates the hazards of continuous gastrointestinal decompression
	14. Explains the principle involved in the wangensteen set-up
	15. States the uses of the different intestinal tubes
GIVEN common surgical procedures employed for certain gastrointestinal disorders	16. Outlines the principles behind and indications of such procedures
	17. Explains the general principles in the care of patients who have undergone such operations
GIVEN specific conditions/situations	18. Specifies the: 18.1 major complications of the condition 18.2 appropriate nursing intervention for the situation 18.3 rationale for the intervention
GIVEN an actual or simulated situation	19. Demonstrates skill in: 19.1 feeding by gastrostomy and jejunostomy 19.2 administering iced lavage 19.3 colostomy care and irrigation 19.4 dietary planning for common gastrointestinal conditions 19.5 care of patients with gastrostomy/jejunostomy/T-tube 19.6 giving hot sitz bath
GIVEN a simulated or actual situation	(Problems on chemical regulation) 1. Demonstrate the following techniques of/identifies deviations from normal based on assessment of the endocrine system: 1.1 inspection - symmetrical or overgrowth of the body (gigantism), excessive growth of short flat bones (acromegaly), obesity of torso, hypogenitalism

	1.2 palpation - enlarged/tender thyroid, nodular thyroid, parathesia of skin (hypoparathyroidism)
	1.3 percussion - (atelectasis)
	1.4 auscultation - palpitation, tachycardia
GIVEN relevant questions	2. States the purpose and nature of the following diagnostic examinations:
	2.1 glucose tolerance test (GTT)
	2.2 blood and urine sugar determination, fasting blood sugar, fractional urine
	2.3 17 ketosteroid determination
	2.4 radioimmunoassay (RAI); e.g., protein bound iodine (PBI)
	2.5 basal metabolic rate (BMR) determination
	3. Interprets deviations from normal findings related to:
	3.1 glucose tolerance test (GTT)
	3.2 fasting blood sugar (FBS)
	3.3 fractional urine
	4. Describes the general preparation and care of patients undergoing the above diagnostic procedures
	5. Discusses the following specific conditions/ problems related to hyper/hypo function of the endocrine glands
	5.1 panhypopituitarism
	5.2 hyperaldosteronism - Cushing's syndrome
	5.3 adrenocorticosteroid insufficiency
	5.4 adrenal insufficiency - Addison's disease
	5.5 hyperthyroidism - cretinism
	5.6 hypothyroidism - myxedema
	5.7 hyper/hypo parathyroidism - Grave's disease
	5.8 diabetes - mellitus, juvenile, insipidus
	6. Enumerates the causes of/common contributing factors to the above conditions
	7. Identifies the signs and symptoms characteristic of the above disorders
GIVEN common drugs in the management of metabolic disorders	8. Matches these with their corresponding action/ therapeutic use
	9. Lists common side effects and known contra-indications, if any
GIVEN specific situations/conditions	10. Specifies the:
	10.1 major complications of the condition
	10.2 appropriate nursing intervention for the situation
	10.3 rationale for the intervention
GIVEN an actual or simulated situation	11. Demonstrates improved skill in:
	11.1 administering insulin in different body sites in proper units
	11.2 urine testing for sugar using benedict solution, test tape, clinitest, clinistix
	11.3 urine testing for acetone using acetest tablets, ketostix
	(Problems on locomotion)
GIVEN a simulated or actual condition	1. Identifies deviations from normal based on the following assessment of the musculo-skeletal system:

	1.1 inspection a. posture and gait b. ability of the client to carry out activities of daily living c. bone, joint and muscle symmetry color, swelling, presence of nodules, atrophy, deformity 1.2 palpation a. head, spine, extremeties - deviation from or limitation in normal range of motion b. crepitation, movement of joints c. tenderness, deformity of joints d. muscle size e. presence of subcutaneous nodules
GIVEN relevant questions	2. States the purpose and nature of the following examinations: 2.1 x-ray of the bone 2.2 biopsy 2.3 arthroscopy 2.4 joint aspiration 2.5 electromyography (EMG) 2.6 radio-isotope skeletal survey 3. Explains the significance of deviations from normal findings related to the following laboratory examinations: 3.1 cerebrospinal and synovial fluid 3.2 muscle enzymes 3.3 serum calcium, phosporous, alkaline phosphatase 3.4 lupus erythematosus preparation (L.E. prep.) 4. Defines/distinguishes the following specific conditions/problems in locomotion: 4.1 abnormalities in curvature of spine- lordosis, kyphosis, scoliosis, ankylosing spondylitis 4.2 trauma - fracture, sprain, strain, dislocation 4.3 infection - osteomyelitis, tuberculosis of the bones and joints, septic arthritis, bursitis 4.4 degenerative - osteoarthritis 4.5 tumors - bone tumors 4.6 metabolic - gouty arthritis, osteoporosis, hyperparathyroidism, rickets, osteomalacia 4.7 auto-immune - rheumatoid arthritis, systemic lupus erythematosus, scleroderma 4.8 congenital - dislocation, clubfoot, spina bifida, wryneck, absence of bone joints 5. Enumerates causes of/common contributing factors to the above conditions 6. Identifies the signs and symptoms characteristic of the above disorders

	7. Selects from among alternatives the pathophysiologic explanation for selected signs/symptoms/orthopedic conditions
GIVEN various types of traction and other orthopedic devices	8. Describes the main principles, features, indications and possible complications of such traction device
GIVEN a situation of a patient in cast, traction or other orthopedic device	9. States the general principles in the care of such patients
GIVEN common surgical procedures employed in the treatment of orthopedic conditions	10. Outlines the principle behind and indications of such procedures
	11. Explains the general principles in the care of patients who have undergone such operations
GIVEN common drugs used in the treatment of orthopedic conditions	12. Matches these with their corresponding action/therapeutic use
	13. Lists common side effects and known contraindications, if any
GIVEN specific conditions/situations	14. Specifies the: 14.1 major complications of the condition 14.2 appropriate nursing intervention for the situation 14.3 rationale for the intervention
GIVEN an actual or simulated situation	15. Demonstrates skill in: 15.1 preparing/assisting a patient in application of cast, traction, and splint 15.2 cast care 15.3 maintenance of traction/prescribed alignment 15.4 care of a patient in stryker frame 15.5 assisting a patient in crutch-walking 15.6 assisting in therapeutic exercises: active, passive, isometric
GIVEN a simulated or actual situation	(Problems on neural regulation) 1. Demonstrates the following techniques of assessment of the neurological status of a patient: 1.1 general appearance - habitus, characteristics of skin and hair, posture 1.2 mental status - state of consciouness, mood and emotional reaction, orientation to person, place and time, memory for recent and remote events, language, content of thought, mental ability 1.3 cranial nerves 1.4 signs of meningeal irritation 1.5 motor function and reflexes 1.6 sensory function
GIVEN relevant questions	2. States the purpose and nature of the following examinations: 2.1 neuroradiology 2.2 electroencephalography (EEG) 2.3 lumbar, cisternal, ventricular puncture 2.4 spinal dynamics 2.5 cerebral angiography 2.6 pneumoencephalography 2.7 ventriculography 2.8 brain scanning 2.9 myelography

	3. Outlines the general physical and psychological preparation of patients undergoing the above procedures
	4. Identifies deviations from normal constituents of the cerebrospinal fluid
	5. Defines/distinguishes the following specific neurologic conditions/problems 5.1 cerebrovascular disease - cerebral atherosclerosis, aneurysm, infarction and hemorrhage 5.2 degenerative disease - Parkinson's disease, multiple sclerosis, myasthenia gravis 5.3 neoplasms - intracranial and spinal 5.4 trauma - brain injury, spinal cord injury, ruptured or herniated intervertebral disk 5.5 neuropathies - trigeminal neuralgia, Bell's palsy, polyneuritis, cerebral palsy 5.6 convulsive seizures - grand and petit mal, psychomotor, Jacksonian/focal, status epilepticus 5.7 infections - poliomyelitis, meninpitis, tetanus, herpes zoster 5.8 cranial malformations - hydrocephalus, cranium bifidum, etc.
	6. Enumerates the common causes of/contributing factors to the above conditions
	7. Identifies the signs and symptoms characteristic of the above disorders
	8. Selects from among alternatives the patho-physiologic explanation for selected signs/symptoms/conditions
GIVEN common drugs used in the treatment of neurologic disorders	9. Matches these with their corresponding action/therapeutic use
	10. Lists common side effects and known contra-indications, if any
GIVEN common surgical procedures employed in neurologic disorders	11. States the nature and indications of such procedures
	12. Outlines general principles involved in the care of patients who have undergone such operations
GIVEN specific conditions/situations	13. Explains/identifies principles of care referrable to: 13.1 the unconscious patient 13.2 the patient with a convulsive disorder 13.3 the patient with a developmental disease 13.4 the patient with a degenerative disease 13.5 the patient with an infectious disease 13.6 the patient with cerebrovascular disease 13.7 the patient with neuropathies
	14. Specifies the: 14.1 major complications of the condition 14.2 appropriate nursing intervention for the situation 14.3 rationale for the nursing intervention
GIVEN an actual or simulated situation	15. Demonstrates skill in: 15.1 preparing and assisting patients for electroencephalogram and lumbar tap/puncture

	15.2 care of the convulsing patient 15.3 care of the patient with altered level of consciousness
GIVEN a simulated or actual situation	(Problems on sensory intake) 1. Demonstrates the following techniques of/identifies deviations from normal based on the physical assessment of the sensory organs: 1.1 inspection - presence of gross abnormalities 1.2 palpation - presence of masses, enlarged lymph nodes, thyroid and salivary glands 1.3 tests for visual and hearing acuity
GIVEN common instruments	2. States the correct name and use of such instruments 3. Demonstrates the correct procedures in the use of the otoscope, ophthalmoscope, nasal speculum and head mirror
GIVEN a list of signs/symptoms referrable to EENT disorders	4. States the significance of the signs and symptoms in terms of the possible disordera/diseases they represent
GIVEN relevant questions	5. Explains the nature and pathophysiology of the following disorders: Eye: 5.1 errors of refraction - hyperopia, myopia, astigmatism 5.2 trauma to any part of the eye - retinal detachment 5.3 inflammatory conditions - conjunctivitis 5.4 ocular emergencies - acute angle closure glaucoma, corneal abrasions, foreign bodies 5.5 degenerative - cataract, tumors Ear: 5.1 obstructions of the external auditory canal or eustachian tube, impacted cerumen 5.2 trauma to any part of the ear 5.3 inflammation/scarring of the tympanic membrane 5.4 infection - acute/chronic tympanomastoiditis 5.5 disturbances of hearing - conductive, sensorineural, mixed hearing losses Nose: polyps, foreign bodies Larynx: laryngitis, tumors
GIVEN a list of drugs commonly used for EENT disorders	6. Matches these with their corresponding action/therapeutic use 7. Lists common side effects and known contraindications, if any
GIVEN common surgical procedures employed in EENT disorders	8. Outlines the principle behind and indications of such procedures 9. Explains the general principles in the care of patients who have undergone such procedures
GIVEN specific situations or conditions referrable to EENT	10. Specifies the: 10.1 appropriate nursing interventions 10.2 rationale for the interventions 10.3 major complications 10.4 individual, family and community resources which can be utilized in rehabi-

	litation of patients recuperating from EENT disorders
GIVEN simulated or actual situations	11. Demonstrates the correct procedures for: 11.1 eversion of the eyelids 11.2 cleansing of the eyelids
	(Problems on emergency and disaster)
GIVEN relevant questions on general principles of emergency and disaster nursing	1. Explains principles related to the evaluation of single-casualty and mass-casualty type of situations
	2. Enumerates the objectives of emergency care
	3. States the principles of emergency management
GIVEN a list of emergency conditions	4. Identifies treatment priorities using the principles of triage
	5. Identifies the following life-threatening conditions: 5.1 cardiac arrest 5.2 respiratory arrest 5.3 shock
GIVEN situations of cardiac and respiratory arrest	6. Explains the possible causes and management of each
GIVEN the types of shock	7. Explains the pathogenesis, effects and management of each
GIVEN relevant questions/situations on other common emergency conditions	8. Describes the common manifestations and the corresponding first aid measures/management principles for the following: 8.1 drug overdose 8.2 animal and insect bites 8.3 drowning 8.4 thermal and radiation injuries 8.5 poisoning 8.6 traumatic injuries
	9. Differentiates manifestations exhibited by patients with an overdose of: 9.1 stimulants 9.2 depressants
	10. Describes envenomization procedure/effects
	11. Differentiates dry from wet drowning
	12. Distinguishes manifestations of salt water drowning from fresh water drowning
GIVEN types of poisoning/poisons	13. Matches each type with the corresponding antidote and/or emergency measure to be taken
GIVEN questions on the nurse's role in emergency and disaster nursing	14. Describes the following: 14.1 Standing orders of Red Cross for disaster nursing 14.2 Emergency and disaster plan of PGH
	15. Explains with specific examples the following functions of the nurse: 15.1 leadership 15.2 teaching 15.3 organizing 15.4 triage
GIVEN questions/situations on the psychological aspects of emergency and disaster nursing	16. Identifies characteristic behavior during the following periods of a disaster: 16.1 warning period 16.2 impact period 16.3 immediate reaction after impact 16.4 period of delayed response

GIVEN questions/situations on legal aspects of emergency nursing	17. Describes nursing measures/interventions for the following characteristic behavior exhibited by patients: 17.1 acute panic 17.2 confusion, blind flight 17.3 depression 17.4 shock 17.5 overreactive response 17.6 inability to speak 18. Differentiates the following: 18.1 statutory law from common law 18.2 criminal law from civil law 18.3 negligence from malpractice 19. Identifies corresponding legal liabilities: 19.1 res ipsa loquitor 19.2 respondeat superior 19.3 liability for assault 19.4 contributory negligence 19.5 standard of care rule
	(PROBLEMS ON PSYCHOLOGICAL ADJUSTMENT/ADAPTATION)
GIVEN relevant questions	(Overview of psychiatric nursing) 1. Explains the purpose, nature and scope of psychiatric nursing 2. Points out significant events in the history of psychiatry and psychiatric nursing 3. Discusses the nature of mental illness as a health problem of the individual, family and community 4. Identifies environmental factors influencing the development of mental illness 5. Discusses aspects of the social system as they relate to the hospitalization and rehabilitation of the mentally ill 6. Examines the role of the nurse in relation to other members of the health team in planning/effecting a therapeutic environment for the client
GIVEN relevant questions GIVEN selected behavior manifestations GIVEN relevant questions/situations	(Psychopathology and psychodynamics of psychiatric disorders) 1. Discusses the different mechanisms of adaptation 2. Identifies the characteristic reactions to stress by stage 3. Discusses the following roots of pathology: 3.1 genetic predisposition 3.2 biological index 3.3 material deprivation 3.4 sensory deprivation 3.5 intrapsychic conflict 3.6 interpersonal trauma 3.7 cultural conflict 4. Matches these with their corresponding meanings/interpretations related to disturbances in affect, thought processes, perception, memory and consciousness 5. Differentiates types of psychological and psychiatric examinations

	6. Defines/distinguishes the following pathological disorders: 6.1 disorders of psychogenic origin - transient situational, personality, psychoneurotic, psychophysiologic, and psychotic disorders 6.2 disorders caused by or associated with impairment of brain tissue functions - acute and chronic brain disorders 6.3 mental deficiency 7. Identifies the different indicators/signs and symptoms/characteristics of the above disorders 8. Discusses the causes/common contributing factors to the above conditions
GIVEN the different individual-oriented treatment modalities GIVEN the different group-oriented activities for patients with adjustment problems GIVEN common psychopharmacologic drugs	(Treatment modalities) 1. Differentiates the methods of therapy as to indications, contraindications, procedures 2. Describes the nurse's responsibilities in the different methods of treatment 3. Differentiates the various group-oriented activities in terms of: 3.1 classification 3.2 relevance to specific patient needs 3.3 nursing responsibilities for the activity 3.4 illustrative examples 4. Matches these with their corresponding action/therapeutic use 5. Lists common side effects and known contra-indications, if any
GIVEN excerpts of a process recording of a nurse-client interaction GIVEN varied situations reflecting problems on adaptation GIVEN relevant questions GIVEN situations of a child with emotional disturbances	(Nursing care of clients with specific behavioral problems) 1. Defines the needs/problems of the client 2. Differentiates the therapeutic from non-therapeutic communication techniques 3. Defines the needs/problems of the client 4. Selects the appropriate nursing interventions/therapy for the following behavioral problems: 4.1 withdrawal patterns of behavior 4.2 aggressive patterns of behavior 4.3 manipulative/provocative behavior 4.4 behavior with sexual connotations 4.5 projective patterns of behavior 4.6 restlessness, severe anxiety, ritualistic behavior, eating difficulties 4.7 alcoholism and drug addiction 4.8 behavioral manifestations reflective of acute and chronic brain tissue impairment 5. Discusses the following principles: 5.1 consistency 5.2 appropriate reward and punishment 5.3 ego and superego support 5.4 opportunity for new experience with relatedness-identification 6. Analyzes the problem of the child 7. Selects the appropriate nursing intervention for the problem identified

GIVEN a patient with an adjustment problem	8. Demonstrates improved skills in: 8.1 communication 8.2 therapeutic use of self 8.3 manipulation of the milieu
GIVEN relevant questions/situations GIVEN a description of a social and family history of an individual with an adjustment problem	(Community mental health nursing) 1. Describes the factors in the community that promote mental health 2. Discusses the opportunities for carrying out the contributions of the nurse in the promotion of mental health and the prevention of treatment of adjustment problems 3. Identifies community resources for the promotion of mental health/management of mental illness 4. Discusses the different factors contributory to the development of the adjustment problem 5. Describes the implications of these factors in the development of the adjustment problem 6. Identifies the family assets and liabilities in the promotion of mental health and treatment of mental illness 7. Explains the importance of family involvement in the care of a member with an adjustment problem 8. Formulates a plan of care based on family resources identified 9. Defines criteria for evaluation
GIVEN relevant questions	(Trends and issues in Mental Health-Psychiatric Nursing practice) 1. Discusses the realities, trends and issues regarding promotion of mental health and prevention/treatment of adjustment problems 2. Derives implications of research findings to Mental Health-Psychiatric Nursing practice

Personal Notes

5.3

CASE STUDY NO. 3

PADJADJARAN UNIVERSITY, SCHOOL OF MEDICINE, BANDUNG, JAVA, INDONESIA

COMMENTARY by S. Abrahamson

This case study illustrates very well the sequential development of institutional objectives, departmental objectives, and specific learning objectives.

Such a process inevitably demands that the faculty be extensively involved, as they were in this case. Moreover, students in the final year of the programme participated in the development of departmental and specific behavioural objectives because they were considered to have an important and relevant contribution to make from the vantage point of one who is about to finish formal education and begin practice.

An interesting point is that the work of this faculty to develop learning objectives, along with that of other medical schools in the country, helped to develop national objectives of medical education. Since the process used by the Padjadjaran faculty emphasized the definition of the competences and duties of physicians in terms of their relevance to the needs of the community, this concept is included in the national statement, although the competences and duties are only given in outline form in this case study.

As in the other case studies, the Padjadjaran account illustrates some educational principles in practice. For example, curriculum planning began in response to a need to change from a medical curriculum developed by the Dutch in the colonial period to one that would better meet the health needs of Indonesia. This case study reminds us that developing countries often turn elsewhere for advice and assistance in solving their manpower development problems, but then must use a two-step procedure to ensure that the solutions proposed are relevant to their particular situation: adopting (where appropriate) educational approaches from elsewhere, then adapting these to local characteristics and needs. All too often, schools attempt to use educational approaches, materials, and even learning objectives developed in some other setting by some other institution without carefully studying the implications. These attempts will fail for very obvious reasons : the approaches, materials, or even objectives are not developed on the basis of culture, socioeconomic conditions, and/or health needs.

The interrelationship between goals and objectives, teaching methods and materials, and the curriculum is shown when the case study points out that the difficulty in obtaining books and other learning materials led to a reconsideration of objectives and learning experiences, as did the awareness that there was not enough faculty to provide appropriate instruction. Obviously, the existence of carefully developed, cooperatively adopted learning objectives facilitated the review and revision of the curriculum.

Intermediate-level objectives can be a serious problem in educational plannning. Most of the time, these objectives are in fact departmental objectives because departments are usually power centres in the school. To ensure inter-departmental cooperation, all departments were expected to divide their educational objectives into three categories: (1) body system; (2) causes of ailment, and (3) frequency of cases and/or the risk involved. Whatever classification was used, all departments were expected to participate.

Another point of interest and importance is that there were faculty members who could not accept the inevitability of change (referred to in the case study as "die hards"). In any social system there will always be those who simply resist any change. Institutions must learn to find ways to move forward despite such "die hards".

This case study is also important because it describes the attempt by a conventional school to use a totally different approach to education: the problem-solving approach as part of a competency-based, objectives-oriented curriculum. (See the case studies on the Newcastle and Ben-Gurion Universities for other illustrations.) While such an approach is ultimately the best amalgamation of learning objectives, professional tasks, and learning experience, it is often - quite realistically - beyond the reach of an established conventional school; it seems to be somewhat more feasible in a new one.

Here, as in the other case studies, it is clear that the support of the administration is an important element in successful curriculum planning. On page 125 it says that the President (Rector) of the University, after attending the first workshop on teaching by objectives, was so enthusiastic about the prospects for change that with his support other institutions soon became involved.

The World Health Organization assisted in the process of curriculum revision by sponsoring workshops for faculty so they could learn about the educational planning process as well as the role and function of learning objectives in that process.

The case study also brings out the influence of sound educational planning and of appropriate learning objectives in determining criteria for the evaluation of students (see page 129). But the Padjadjaran staff went further; it was their intent to examine the long-term effect on the health situation in the country. All such activities (educational planning, establishing criteria for student evaluation, and assessing the health situation) are greatly facilitated by the existence of institutional learning objectives.

The usefulness of relevant learning objectives for educational decisions is probably best expressed in the following paragraph from the case study:

> "As it became clear that learning objectives have to be unconditionally relevant to the growing and changing health needs of the community, a wave of enthusiasm swept over the teaching staff. A logical process to develop objectives was badly needed, and it was what the faculty had been anticipating for a long time as a step forward to improve the curriculum. Almost everyone immediately recognized the value of using learning objectives to tackle problems in medical education. The old habits and traditional way of thinking, based on experience only, were to be abandoned."

THE TEST OF TRIVIALITY OF AN OBJECTIVE IS NOT IN THE WORDS OF AN OBJECTIVE OR IN A STATEMENT OF PERFORMANCE. IT IS IN THE CONSEQUENCE OF NOT ACHIEVING THE PERFORMANCE.

MAGER

Change is the process by which the future invades our lives.....

The craggy outlines of the new society are emerging from the mists of tomorrow. Yet even as we speed closer, evidence mounts that one of our most critical subsystems - education - is dangerously malfunctioning.[1]

Padjadjaran University, School of Medicine
Based on an original case study prepared by Dr H.W.A. Donhuijsen, Head, Bureau for Curricular Development

INTRODUCTION

Life and death, birth and decease, growth and decay, adolescence and senescence. All these events are well known to every human being and they are all of one and the same process, i.e., the process of change.

Considering that there are big differences in the educational level between the populations of different parts of the world as well as amongst their respective communities, it is quite natural to assume that, where illiteracy is disappearing, the awareness of the need to change is increasing, thus resulting in a massive change of needs that are more pressing in these places than in societies where formal education has already become established.

The development of communication systems has propagated masses of information on the changes occurring in the parts of the world where populations have benefited from education with the result that there will be in developing countries, if not already, immense pressure to institute changes to meet their needs.

It is in the light of that hyperbolical increase in demands that the medical curriculum must be reoriented to community needs. Indonesia, like so many other developing countries, adopted approaches to curriculum development from elsewhere and then afterwards decided to adapt them to the Indonesian situation.

The medical curriculum developed by the Dutch during the colonial period was subject-oriented, and standards of achievement were greatly influenced by European values. It is quite obvious then that the Republic of Indonesia has had to change the education of health care personnel, particularly physicians. It took a number of years before the Indonesian government decided to accept the problem-solving approach as part of a competency-based, objectives-oriented medical curriculum. This occurred because, in the face of the ever-increasing needs of the rural population, the only new ideas deemed acceptable to meet those needs were the ones about community-oriented medical education. The changing needs of the community have now made the need for change in medical education imperative.

After explaining why there was a change from a subject-oriented medical curriculum to a new Indonesian objectives-oriented one, this case study will go on to show how these objectives were developed, their outcome, and their influence.

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[1] Toffler, A. Future Shock. New York, Random House, 1970.

1. HOW THE OBJECTIVES WERE DEVELOPED

One important feature in the development of objectives was a review of the kinds of situations and problems a future doctor would have to deal with. To carry out this review meant getting the practising physician involved in the definition of competencies and duties relevant to the needs of his community. All teaching staff and a selected part of the student body were involved in providing this type of information so badly needed.

The following steps were undertaken to develop the objectives:

1. With support from WHO, all schools of medicine in Indonesia carried out, in turn, a series of workshops on teaching by objectives. At the beginning, these workshops were attended by the heads of departments. Later, the participants were members of senior staff responsible for developing the new curriculum and estimating the changes to be expected as a result. There was a planned turnover in these groups in the hope of spreading new ideas among other staff members and preparing them for future workshops on objectives. The schools' institutional objectives were developed first, followed by departmental objectives, and then those relating to teaching, learning, and the expected behaviour of the students.

2. Officials of the Department of Health and the Department of Internal Affairs were invited to take part in the workshops as resource persons to ensure that objectives were defined in terms of their relevance to the actual health situation. In turn, the departmental and specific learning objectives were developed with the help of a group of senior-year students so they could give valuable, first-hand information, from their point of view, about the interrelationship between the many different subjects to be mastered.

   The institutional objectives finally adopted for the School of Medicine of Padjadjaran University read as follows:

> Doctors graduating from the School of Medicine of the Padjadparan State University must possess the following competencies: The graduate must be:
>
> a) skilled in diagnosing and managing those diseases that are occurring frequently; he must be able to identify and refer diseases which call for emergency measures and be able to identify seldom-occuring diseases; and he must be skilled in coping with emergency cases.
>
> b) skilled in the management of a community health centre.
>
> c) sensitive to social and cultural values and to the beliefs of his community.
>
> d) able to develop a code of ethics.
>
> e) skilled in collecting and analysing health data, and in applying it sensibly.
>
> f) skilled in the construction of health education programmes.
>
> g) skilled in seeking continuously for perfection of his competences.

3. Another step in the development the objectives was the convention of faculty leaders from all state medical schools. This meeting was organized by the Consortium of Medical Sciences (a coordinating body set up by the Ministry of Education and Culture) to define a common denominator in the end-product of the different curricula.

   The workshop held for this purpose, again with continuous support from WHO, succeeded in defining one common image of the Indonesian doctor. This consequently laid the foundation for the development of learning objectives for all curricula in Indonesian medical schools.

4. The results of this meeting were reported to the Minister of Education and Culture. They were the main topic of discussion between the Ministry of Education and the Ministry of Health. The Ministry of Education and Culture then issued a decree on the national objectives of medical education. This specified three areas of competence (intellectual, practical, and affective) together with an emphasis on life-long education as a requisite for successfully serving the community. The following is a brief summary of these national objectives :

Upon completing the curriculum through using a certain learning process, the student has to have acquired sufficient knowledge, skill, and the appropriate attitude to :

1. Carry out the practice of medicine within a system of health services in accordance with general directives issued by the Government:

   a) To be acquainted with Indonesia's health problems, to set priorities for solving these problems, and to be able to take the necessary steps to solve them.

   b) To be capable of managing completely all problems connected with the patient's illness; and not to forget the mental, psychological, social, and cultural aspects of illness.

   c) To be capable of using all available resources, human as well as material, to improve the health situation of the community.

   d) To be capable of leading and guiding a health team.

   e) To be aware that a good system of health services is a very important factor for improving the community's health.

   f) To be capable of educating the community by making each member a participant in the efforts to improve their health situation.

2. Continuously develop his/her medical knowledge, through continuing education.

3. Evaluate professional activities periodically and be able to recognize the need to modify, improve, or adapt them.

4. Help in the development of medical science by taking part in teaching and research; and by looking for solutions to the health problems of patients and the community, and problems of the health service system.

5. Take responsibility for developing one's personal qualities according to medical ethics.

6. Become a creative and productive member of the community, available to everyone, sensitive to change, and aware of future needs; and capable of directing the community along the same lines.

All the steps involved so far in developing the objectives only show one facet of the process. The other facet is the implementation of the Ministry's Decree and subsequently the action undertaken by the medical schools to improve and adapt their institutional objectives. Before closing this chapter on the development of objectives, it may be of interest to note that the President (Rector) of the University, after attending for a couple of hours the first workshop on teaching by objectives, became so enthusiastic about this type of educational reform taking place in his institution, that he invited other schools, (law, economics, and dentistry) to organize the same kind of workshop and offered the help of the medical faculty. Other faculties have since held similar workshops and each time the medical faculty has had the task (and honour) to participate in the group to develop objectives for each of these schools.

The workshops on objectives were preceded by activities which introduced members to educational measurement. The teaching staff became acquainted with a new evaluation methodology, which gave them new ideas about what education really should be. As the staff began to use a common terminology, this also facilitated the evaluation of the curriculum as a whole. In brief, the workshops on educational measurement proved to be a very big factor in helping the staff to prepare for the job ahead.

II. HOW AND WHY HAVE THE OBJECTIVES BEEN MODIFIED ?

There are many reasons which explain the need for modification of the initial objectives.

1 Why objectives were modified

1.1 Obviously the institutional objectives formed the basis of the whole curriculum development process described earlier, and they were the concern of the entire school. These objectives could not be used in all schools throughout the nation, but they were an important step in introducing community-oriented medical education in Indonesia. Without this ground work almost every official decree, even if it were intended to benefit the community, would be doomed to failure.

1.2 Another factor, quite as important, is the problem of integrating theory and practice when there are such difficulties as limited manpower, facilities, and funds. It is difficult to achieve this integration given these limitations. Although the generally accepted principle of integrated learning may not be applied because of local restrictions, it should not be lost sight of, and continued efforts should be made to overcome the constraints that hamper its full application.

1.3 The third reason why objectives were modified is that at the beginning the teaching staff entrusted with the development of objectives had no previous experience of this kind, and no idea about the kind of difficulties that could occur when constructing a curriculum, e.g., content, methods, etc. Some mistakes quite naturally occurred, which were not apparent at the time. Therefore, certain modifications of the original objectives had to be made later on.

1.4 From the moment the School adopted its institutional, departmental, and ensuing specific learning objectives, all teaching staff began using them in daily teaching activities. There were, however, some constraints. Some of these were expected, others were only minor problems.

For example, the teaching and learning strategy connected with some of the specific objectives called for providing the students with a series of books which were difficult to obtain. Although some photocopying could help, it meant nevertheless cutting down on content. Another example: the decision to use group discussion, considered an excellent method of learning, proved to be quite impracticable because of the shortage of manpower. Consequently, there were questions about the use and effectiveness of the objectives.

1.5 Experience gathered during the several workshops prepared the faculty leaders to recognize the difficulties and to decide what measures to take. Their efforts had but one goal: to increase the efficiency and effectiveness of teaching as well as learning. Therefore, decisions based on an awareness of the urgent need for change were taken to improve the process.

2. How objectives were modified

2.1 Members of the teaching staff who gave examples of competencies in health care during the above-mentioned workshops were invited to participate in the work of the Bureau of Curricular Development. They were assigned to look for actual or potential problems in implementing objectives.

2.2 One of the first things this task force did was to request the Dean to organize more workshops so that more staff members could become aquainted with the concept and development of educational objectives. This would increase the number of staff prepared to develop and assess more and better objectives. Thus the faculty would improve its ability to cope with problems in the development of curricula.

2.3 The second thing deemed necessary was the development of a mechanism which would facilitate integration through which all departments could match their objectives against each other's and thus reach a high degree of interrelation and correlation. This search for integration should then guarantee a better appreciation for each other's role in the day-to-day overall teaching process. In this way, the age-old barriers between the different subjects and departments could progressively be broken down, while at the same time the efficiency of the faculty's activities could be enhanced.

The mechanism thus developed is based on the following:

The medical curriculum should be considered a coherent whole in which all subject units are interrelated by a common basic concept.

This concept can be defined in terms of:

- the competencies required by a physician;
- the situation(s), i.e., problems the physician is likely to encounter.

However, the possibility of using some other basic concept should not be excluded.

2.4 The third modification described the different levels of competence without too much differentiation, for practical reasons. The number of action verbs to describe the competencies required were cut down to at most three or four verbs per level of competence. The choice of appropriate verbs was a matter of consensus. These modifications avoided misunderstanding and facilitated the comparison of objectives.

2.5 Next, the task force proposed dividing the curriculum into three or four stages:

- Premedical
- Preclinical
- Paraclinical
- Clinical

The aim was to improve interrelationships and cooperation between departments. The proposed system favoured coordination at each stage of the curriculum to produce a unified and coherent curriculum. The objectives were sub-divided as follows:

A. All departments classified their educational objectives under the following 11 systems:

1. The Respiratory System
2. The Digestive System
3. The Uro-Genital System
4. The Cardiovascular System
5. The Nervous System
6. The Organs of Sense
7. The Bones and Joints
8. Blood and Lymph
9. The Endocrine System
10. The Muscular System
11. Objectives not pertaining to any of the above.

B. Those departments that considered it appropriate divided still further the objectives grouped under A into four subgroups, according to the four main causes of disease :

1. Inflammation
2. Trauma
3. Neoplasm
4. Congenital defects

C. Those departments that considered it appropriate, divided again the objectives as grouped under (A) and (B) into four groups, according to the frequency of cases and /or the risk involved :

1. Common problems
2. Common emergency problems
3. Rare emergency problems
4. Rare but serious problems

By dividing and sub-dividing the curriculum this way, all departments can discuss with each other the development or (if necessary) the deletion of objectives. The clinical departments can trace their objectives and compare them with the objectives set by the other departments (paraclinical, preclinical, premedical) and vice versa.

The sequence of the eleven systems in (A) was established on the basis of data compiled by the Ministry of Health, thereby relating them to the incidence of disease. The ailments listed under (B) were arranged on the same basis. However, this sequence is not permanent. Inflammation, as the first priority cause of disease, could be replaced within a couple of years by road accident trauma.

2.6 Finally, the task force set up to solve problems on the implementation of the objectives urged the Dean to instruct all departments (and thus all staff members) to scrutinize all the objectives they had developed so far and to classify them according to the system developed.

III. THE INFLUENCE OF THE OBJECTIVES ON CURRICULUM CONSTRUCTION

As it became clear that learning objectives have to be unconditionally relevant to the growing and changing health needs of the community, a wave of enthusiasm swept over the teaching staff. A logical process to develop objectives was badly needed and it was exactly what the faculty had been anticipating for a long time as a step forward to improve the curriculum. Almost everyone immediately recognized the value of using learning objectives to tackle problems in medical education. The old habits and traditional way of thinking, based on experience only, were to be abandoned.

1. Curriculum construction

This new outlook was the motivating force to change the curriculum.
This change occurred in three different ways:

1.1 Starting with the community and its changing needs as terms of reference, great changes came about in the curriculum: from hospital-oriented to community-oriented; from subject-centred to a problem-solving approach. This was the first step.

1.2 The second way, linked to curriculum construction, was the systematic planning of the programme. The day-by-day implementation of the objectives required the organization of all teaching/learning activities. Each step in the planning was carried out and then immediately evaluated. This painstaking and systematic way of planning a programme had never been used before by the teaching staff.

1.3 All faculty (some die hards excluded) are now convinced that change is necessary and inevitable. They are now fully aware that the competencies a physician needs to meet a community's changing health needs can no longer be acquired through the traditional and rigid system of education.

The enthusiasm of those involved in this undertaking stimulated and encouraged the others who were reluctant to change the process of curriculum construction; their determination accelerated the process of change.

2. Teaching Content

The new curriculum required an examination of all teaching content and subsequent alterations:

2.1 Some subject matter had to be discarded.

2.2 Other parts of the course content, though useful, had nevertheless to be put aside because they were considered inappropriate in the undergraduate curriculum. The underlying objectives of this subject matter were considered relevant to post-graduate medical education.

2.3 The way the objectives were classified showed that departments were working at cross purposes and that some parts of the subject content were being taught by several departments aiming at the same competencies. This was a waste of time and manpower. Departments were then made responsible for correcting this to avoid duplication.

These activities were carried out - mostly in a friendly, cooperative way, as everyone concerned was reminded of the importance of relevance and of the implementation of teaching/learning activities at different stages in the curriculum.

3. Teaching and Learning Strategy

The implementation of objectives instigated a change in the teaching/learning process. Becoming acquainted with cognitive and psycho-motor abilities or tasks, affective aspects of behaviour, and different levels of competence made the staff fully aware of the shortcomings of the ordinary curriculum.

When it came to the organization of the teacher's as well as the learners'activities, it became all too evident that many changes were about to be made in the old-fashioned way. At the same time, it became obvious as well that the purchase of new audiovisual material and books was necessary. The teaching staff had to make full use of all available material because the budget could not provide for much expenditure on new equipment.

IV. INFLUENCE OF OBJECTIVES ON EVALUATION OF THE STUDENT

One important step in the process of developing objectives, aside from describing these in terms of measurable behavioural outcomes, is defining the acceptable level of competence required at all stages of the educational process as well as at graduation. By defining this acceptable level of competence, the passing grade can be automatically determined. This implies a direct relationship to the evaluation of student performance.

Once there is a clear picture of the acceptable competencies required, teachers as well as students are informed about the content to be examined. Questions, whether in the form of multiple choice tests, or in some other form, have to be related to the objectives. Other questions may be used to test whether the student has attained a higher level than the acceptable passing level.

The preparation of activities on the basis of objectives made it clear to all staff members that first-hand information on the capabilities of their students was an indispensable step in the process. This kind of evaluation (pre-test) had never been used or even considered before.

The evaluation process should not assess only the students' performance but measure the extent to which the objectives have been met at the end of the teaching cycle. The important question is: in what way has the teaching/learning process changed the student since he took the pre-test at the beginning of the educational programme?

V. LONG-TERM EFFECT ON THE HEALTH SITUATION IN THE COUNTRY

All the preceding chapters have tried to show that the medical curriculum in almost every medical school in Indonesia has undergone quite important changes. These changes are strongly related to fundamental changes in the way objectives are formulated. This affects all other aspects of the curriculum as they all are dependent on those objectives.

The educational process through which a student is prepared to acquire certain competencies should have some influence on the health situation in the country. Apart from the question whether that process and that curriculum have indeed succeeded in producing a physician who is competent to respond to the community's demands, another question must be asked : what will be the influence of this physician? Will he be a "better" doctor now? Will the change be positive, or downright negative? And if it is positive or negative, to what extent?

The process of change has just started in Indonesia. All of the medical curriculum has not been revised to the same extent. We cannot therefore evaluate as yet the total influence of this change. An overall evaluation should be carried out in a couple of years when the curriculum as a whole will have achieved a certain level of stability.*

However, in spite of the short time since changes began, some positive results have been evident:

1. The doctors recently graduated appear to be better prepared to cope with health problems, particularly those related to community service, management, and organization.

   These qualities might be traced to more efficient and effective learning and to having exposed the student to new and different learning experiences, e.g., management, communication skills, behavioural sciences, community medicine, etc.

2. According to accounts from health officials working in different parts of the country, these new learning experiences have given the newly graduated doctor the ability to adjust much faster and much better to diverse situations, irrespective of the environment in which he has been asked to practise.

3. The introduction of learning objectives based on community needs has not been limited to the undergraduate curriculum. Teaching by objectives now has a strong foothold in post-graduate education. The post-graduate courses have been examined for their relevance to community needs, and their reorientation has changed quite radically.

* See Appendix I.

APPENDIX I

THE CORE-CURRICULUM THE ULTIMATE AIM OF ALL SCHOOLS OF MEDICINE IN INDONESIA

I. To be considered:

1. As the result of a combined effort of all Schools of Medicine; after a timeand money-consuming process.
2. One step nearer towards the adaptation of the medical curriculum to the needs of the Indonesian people.
3. As a stimulus as well as a directive for adaptation in the process of developing and improving the present objectives.
4. Already operational in its features; but still in the process of development.

II. Its orientation is: Competence, as needed by the Indonesian people and as stipulated by the Indonesian Government.

III. It comprises:

1. Four main areas of competence:
   1.1. The Medical Area*
   1.2. The Surgical Area
   1.3. The Area of Attitude and Conduct
   1.4. The Area of Community Health
2. The spreading of these four areas into the different disciplines involved in medical education.
3. The objectives of each discipline, elaborated through the Specific Behavioural Objectives.
4. Courses or curricular packages of each of the disciplines; each course allotted a certain load.
5. The description of the Level of Competence needed.
6. The description of Teaching and Learning Events.

* EXAMPLE of objectives in the "Medical Area":

General Objectives:

1.1. (He/she must be) able to diagnose diseases and emergency cases that are to be found frequently in Indonesia.

Intermediate Objectives:

1.1.1. (He/she must be) able to take the anamnesis, to do the physical examination, to assess the psychic state, to execute routine laboratory work and other supporting services; and to sum up the collected data in order to decide on the diagnosis.

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5.4

CASE STUDY NO. 4

THE UNIVERSITY OF NEWCASTLE, FACULTY OF MEDICINE, NEWCASTLE, NEW SOUTH WALES, AUSTRALIA

COMMENTARY by S. Abrahamson

This case study describes an exciting new approach to medical education that may so captivate the reader that the underlying concept of this international survey, i.e., the value of clearly defined expected outcomes of medical education programmes based on the health needs of the society, might be lost. The programme itself - its departure from convention, its incorporation of the best in learning psychology, its reliance on problems as the basis for all learning, and its dedication to the major principle that learning is the focus and not teaching - may steal attention away from the fact that the learning objectives: (1) were developed from an examination of the needs of the community; (2) were genuinely used as guidelines for all educational planning; and (3) became the basis for all student evaluation, both formative and summative, and provided the structure for programme evaluation. Thus one can read and fully understand the flow of the educational planning process from the definition of the health needs of society to programme evaluation - and all with the underlying theme of learning objectives.

This case study explains how the needs of the community were used as the starting point for planning this new school of medicine. It also refers to the crucial role of the founding dean, David Maddison, whose recent and untimely death is mourned by the entire world of medical education. How refreshing to read that Dean Maddison rejected the temptation of change for the sake of change but based his fundamental decisions about curriculum design on wide-ranging considerations of the existing system of health care delivery and the existing system of medical education. The rejection of "change for the sake of change" is important, but change considered in the light of an examination of health care needs is the crucial step.

For those seeking to understand better how learning objectives are used, this case study tells us that it was the objectives that defined the Faculty's responsibilities toward its students and thus circumscribed not only what should be taught and learned (content), but also how students should be encouraged to learn (process). In this school, learning objectives not only facilitated the definition of essential content; they also significantly influenced - even determined - student learning activities. The case study goes on to tell us that the "processes of education which ought to be applied emerged with reasonable clarity".

The "Tutor Guide to Working Problem 3-A.4" (see Figure 2) provides a fine illustration of how logically the objectives were formulated from (1) an earlier review of community health needs through (2) a selection of topics to (3) a specific learning activity. There is enough detail here to provide a model for others.

Table II contains another interesting illustration: it shows how carefully developed learning objectives can facilitate (1) the definition of "level of competence" expected in students and (2) the introduction into the curriculum of a graded level of difficulty of content and/or learning experience(s). All too often in medical education, little attention is paid to this - particularly in clinical disciplines.

The case study clearly shows how objectives determine the process of assessment. There is no question that this is facilitated - indeed, totally determined by the statement of desired learning outcomes. The reader cannot fail to anticipate the evaluation data that will be provided after the first graduating class completes its programme at the end of 1982. It is particularly refreshing to note that in all references to evaluation - of the students and of the programme - the reference is to learning.

The four broad purposes of learning objectives are indicated in the study.(see page 134). Included among these purposes is helping faculty members "reach consensus... on what should be learned and how students should be assisted in their learning". Recognizing that in most schools faculty members seldom can reach a consensus on educational matters, this certainly suggests that well-stated learning objectives (derived from an analysis of health needs and of the tasks of the practising health professional) can facilitate that process.

Another purpose of great importance is "to provide students with a guide both to what the Faculty expects them to accomplish and to their own learning." There is data to suggest, that when students are aware of the desired or expected outcomes of their learning experiences, this facilitates their learning. Here, however, the process seems to go much further. In this programme, learning objectives become progressively less detailed and eventually disappear completely as students formulate their own objectives. How refreshing to at last observe the application of the sound educational principle that students should formulate their own learning objectives - surely the best basis for that much talked-about "life-long learning".

One final note with regard to this case study is to point out that the expected practice activities of the graduate form the basis for educational planning and evaluation. Such a practice is a rarity in medical education - despite the unassailable logic of the idea. Indeed, this case study (along with the Ben-Gurion example) describes a medical education that approximates the "ideal" of medical education: an analysis of the health needs of society leading to a description of the professional profile of the physician in the community, including the tasks to be performed by the graduate of the medical school which, in turn, become the learning objectives from which emerge the learning experiences, which themselves are the very problems (or similar ones) described in the health situation. Note how one does not even need to use the word curriculum. This survey began as a survey on the use of objectives. It demonstrate clearly that objectives are merely a means to an end: the most efficient and effective learning experiences to prepare practising health professionals for their roles in providing needed health care in their communities.

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The classically rigid, inflexible departmentalization of faculties of medicine is probably the greatest single obstacle to educational reform.

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Based on an original case study prepared by
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In 1973, the Australian Government announced its decision to establish a new medical school, the first one in a provincial city. This decision was based on a report that called for an innovative medical school.[1]

The founding dean rejected the temptation of change for the sake of change, but based his fundamental decisions about curriculum design on wide-ranging considerations of the existing system of health care delivery and current methods of medical education. An examination of the country's health care needs in the context of rapidly changing social and economic conditions led to the decision that medical education at Newcastle should depart from the conventional kind in a number of significant ways.

The University's Faculty of Medicine accepted its first students in March 1978. It is the tenth medical school in Australia, a country with a population of approximately 15 million inhabitants. Newcastle is the third medical school in New South Wales; this state has a population of under five million. The other two schools are situated in the state's capital, Sydney, with over two million inhabitants. Newcastle is a provincial city with a catchment area of 30,828Km^2 and less than 500,000 inhabitants.

Shortly before the Newcastle Medical School opened its doors, the two medical schools in Sydney had reduced their curricula from six to five years in anticipation that post-graduate training, necessary to obtain a licence to practise, would be increased from one to two years. The majority of medical students in Australia begin their studies immediately after leaving school, around 17 years of age. They are selected usually on the basis of high scholastic achievement. Most medical schools expect studies in the natural sciences as prerequisites. The Newcastle Faculty of Medicine instituted an experiment in 1977 where half the students are selected on the basis of academic achievement and the other half have to demonstrate that they can successfully complete a demanding academic course of study. The candidates are then selected on the basis of results in a number of tests and a semi-structured interview. Newcastle has no mandatory prerequisites and no quota on female or older applicants for its annual intake of some 60 students.

The full-time academic staff is relatively small (46 approximately) and includes teaching staff for the as yet relatively unorthodox disciplines of behavioural science (3), community medicine (3), medical education (2) and occupational medicine (1). The medical school does not delegate any of its teaching to other faculties in the University, but it does call on some 200 practitioners to participate as tutors or supervisors. It is thus faced with the additional task of establishing viable teaching and research facilities in urban and rural hospitals, community health centres, and general practices (with a fee-for-service system) which have little if any teaching experience. All this has to be accomplished at a time of significantly shrinking financial resources for teaching, research, and health care services.

The founding Dean of the School expressed the philosophy of this new institution:

"In the founding of the Medical Faculty of Newcastle University, the emphasis was not primarily on the need to produce more doctors, whom many believe to be already in sufficient numbers in Australia. Rather, it expresses a need to make medicine much more responsive to the needs of the community, and to use efficient educational processes.

"...the philosophy and objectives of the education programmes ...were derived from a careful analysis of the Australian health care system and the problems of current medical care.

"The new philosophy and objectives have a number of implications, first for the selection of students. Academic performance alone was seen to be an inadequate criterion. Therefore, a number of community representatives were asked to draw up a set of selection criteria. At present 50% of the students are selected on the basis of these criteria, and 50% are selected purely on academic performance. An evaluation of the two sets of criteria will be made later.

"Since the operation of the curriculum would depend very much on the staff selected, and the order in which they become involved, a deliberate choice was made to include in the first batch of foundation professorial appointments an associate professor of medical education, a professor of behavioural sciences and a professor of community medicine.

"The teaching strategy as reflected in the curriculum, and the process used, focus on the management and solution of clinical problems, e.g. chest pain. Students learn by working on these problems either individually or in small groups. Much of the work is done in the community, and the students are encouraged to distinguish the different kinds of competence required by a general practitioner and a specialist in dealing with different conditions.

"The administrative structure has sought to avoid the traditional depart- mental structure with its known dangers."[2]

1. HOW LEARNING OBJECTIVES WERE DEVELOPED

Programme objectives (Table I) (the desired outcomes of the education programme) were developed bearing in mind the following six considerations:

1.1 (i) Student's own learning - the competencies needed for the pursuit of a lifetime of learning in relation to professional responsibilities.

(ii) Scientific method and procedures - to be used not only in carrying out work as a practising and enquiring physician, but also in continuing education.

(iii) Clinical diagnosis, investigation, and management - aspects central to the performance of a physician.

(iv) Attitudes and personal characteristics - their development is often neglected in many curricula but vital for the effective practice of medicine.

(v) Population medicine - an important distinction between the physician's traditional responsibility to the individual patient and responsibilities to defined population groups (e.g., mothers, children, drug abusers, accident casualties, the aged).

(vi) Doctor/patient relationship - Although linked with (iv), attitudes and personal characteristics, it merits specific emphasis.

Although these considerations were quite general, the objectives derived from them served as criteria for designing, implementing, and evaluating the curriculum.

TABLE I

PROGRAMME OBJECTIVES*

It is proposed that the Faculty of Medicine at the University of Newcastle should develop an educational programme designed to ensure that, at its conclusion, the graduate:

OBJECTIVES RELATED TO THE STUDENT'S OWN LEARNING

(1) has demonstrated his ability and his willingness to achieve and maintain responsibility for his own learning, and for the continuing evaluation of his own performance as a physician;

(2) has demonstrated his ability to locate biomedical information required for the understanding and management of medical problems, through an appropriate use of available educational resources;

(3) has demonstrated the ability to monitor, granted appropriate consultation, his own progress in the acquisition of information and skills;

(4) has demonstrated that he is both motivated and educationally prepared to undertake further training in the special discipline of his choice;

(5) has demonstrated that he accepts that medical education in its full sense is a lifelong activity and that he is prepared to invest time in the maintenance and further development of his own knowledge and skills, over and above the pursuit of higher professional qualifications;

(6) has demonstrated his ability and his willingness to engage in a critical evaluation of the programme's objectives;

OBJECTIVES RELATED TO SCIENTIFIC METHOD AND PROCEDURE

(7) has demonstrated that he can make reliable observations of cellular, physiological, and behavioural phenomena, and that he can extract the relevant data from these observations, integrating where appropriate the information provided from these three perspectives on human biology;

(8) has demonstrated his ability to assess the reliability of conclusions based on reported data, and to comprehend the standard forms of statistical treatment employed for the analysis of such data;

(9) has demonstrated a critical appreciation of the techniques, procedures, goals, and results of biomedical research, including in particular an understanding of the scientific method, the reliability and validity of observations, and the testing of hypotheses;

OBJECTIVES RELATED TO CLINICAL DIAGNOSIS, INVESTIGATION, AND MANAGEMENT

(10) has demonstrated his understanding of the mechanism and significance of health-related physical and behavioural events, normal and abnormal, at levels ranging from the molecular to that of the community and wider environment;

(11) has demonstrated the ability and willingness to apply his understanding of biological mechanisms to the diagnosis and management of illness;

(12) has demonstrated the ability and willingness to apply his understanding of psychological and social mechanisms to the diagnosis and management of illness;

(13) has demonstrated the ability to obtain a satisfactory clinical history from a wide variety of patients, and to elicit clinical signs through the conduct of an appropriate physical examination - these skills should be demonstrable with both adults and children;

(14) has demonstrated the ability to adopt a problem-solving approach to clinical situations;

(15) has demonstrated an appropriate level of skill in the diagnosis of a defined range of clinical problems;

(16) has demonstrated both a capacity to cope with uncertainty in the clinical context and a tolerance for ambiguous situations;

(17) has demonstrated the ability to write a satisfactory clinical record on the basis of his own observations and formulation of a clinical problem, and to communicate his findings to others (orally and/or in writing) in an appropriate form;

(18) has demonstrated that he is able and willing to take responsibility, under supervision, for the management of a defined range of common acute and chronic clinical conditions;

(19) has demonstrated an understanding of the principles of therapeutics, including the possible complications of treatment;

*Faculty Working Paper VI: The undergraduate programme objectives. Newcastle, New South Wales, The University of Newcastle, Faculty of Medicine, 1976.

(20) has demonstrated an appropriate level of skill in the basic psychomotor tasks required to be performed by all medical graduates during their intern year;

(21) has demonstrated his ability and willingness to devise and maintain an appropriate management programme for patients with chronic, intractable illness, including terminal disease;

(22) has demonstrated a knowledge of the significance and limitations of the findings of standard laboratory and allied investigations;

(23) has displayed an ability to plan and interpret a programme of investigations appropriate to the clinical problem presented by the patient, with due regard for patient comfort and safety and for economic factors;

OBJECTIVES RELATED TO ATTITUDES AND PERSONAL CHARACTERISTICS

(24) manifests those personal characteristics essential for the effective practice of medicine, including: (i) an awareness of his own assets, limitations, and responsiveness (ii) responsibility, thoroughness, trutworthiness, and confidentiality (iii) sensitivity to the needs of others and concern for other persons;

(25) has consistently demonstrated the humanistic attitude which is central to the effective practice of medicine, so that he includes caring and comforting amongst the appropriate tasks for a physician;

(26) has demonstrated that his approach to all patients reflects the attitude that the person who is ill is more important than the illness from which he suffers;

OBJECTIVES RELATED TO POPULATION MEDICINE

(27) has demonstrated his ability and his willingness to apply scientific principles to the study of the behaviour of individuals, groups, and institutions;

(28) has demonstrated his understanding of the impact of illness upon families, and the importance of family factors in prevention, treatment, and rehabilitation;

(29) has demonstrated his understanding of the importance of environmental factors in the causation and maintenance of illness, and in its response to treatment;

(30) has demonstrated a positive, consistent, and informed attitude towards the prevention of illness and the maintenance of health, at both individual and population levels;

(31) has demonstrated his awareness that major changes in individual and community health are likely to depend as much or more on change in the behaviour of people as on the manipulation of the physical environment;

(32) has demonstrated his awareness of the importance of the practice of medicine in both community settings and in hospital settings;

(33) has demonstrated his knowledge of the incidence and prevalence of disease in the Australian community;

(34) has demonstrated his understanding of the organization of the Australian health care system, from the provision of primary care to geriatric and rehabilitation services;

(36) has displayed a thorough knowledge of health and welfare services as exemplified by those existing in the Hunter Region, and understands the actual and potential contribution of each to the prevention and treatment of illness;

(37) has demonstrated his awareness of the role of the physician in health/welfare professional teams and also his willingness to work co-operatively within them;

(38) manifests a positive attitude towards the concept of the physician as an educator, for example to his patients with regard to their illnessess, to the public in matters of health, and to his colleagues in professional matters and relationships, and shows an appropriate level of ability and confidence in this role;

(39) has demonstrated the ability to assess the structure and functioning of community health services in relation to the needs of individuals or specific groups;

(40) has demonstrated the ability to interpret and criticize data from evaluation studies of medical services supplied to communities or populations;

OBJECTIVES RELATED TO THE DOCTOR/PATIENT RELATIONSHIP

(41) has demonstrated his understanding of the importance of the doctor/patient relationship in the provision of medical care at all levels;

(42) has demonstrated his openness to genuine yet objective involvement with patients, free from undue interference with communication created by psychological defence mechanisms of the type which lead to an aloof, excessively detached approach;

(43) has demonstrated the ability and the willingness to establish effective communication with a wide variety of patients, healthy members of the community, and other professionals;

(44) recognizes those patients who display dependency or hostility to an extent which affects patient management and patient co-operation;

(45) has demonstrated an awareness of how his own personality affects his interactions with his patients and how his own anxiety and prejudices may alter patient attitudes and behaviour.

1.2 Decisions which followed from the Programme Objectives

These objectives suggest the Faculty's responsibilities towards its students and include not only what should be taught and learned (content), but also how students should be encouraged to learn (process).

Accordingly, an analysis of the programme objectives was undertaken to identify the educational processes which would have to be built into the curriculum. The results can be summarized as follows:

1.2.1 Learning how to study during the undergraduate years and beyond.

- Problem-based learning should be practised consistently throughout the five-year course. Learning should revolve around health problems of individuals or of groups in the population. Students should be encouraged to identify what they need to learn in order to solve these problems by framing logical sequences of questions and synthesizing their answers in order to apply their new knowledge to the original problem or situation.

- Students should be encouraged to learn independently by progressively giving them more responsibility for deciding what to learn and to what extent. They should also be given frequent opportunities for identifying their own strengths, weaknesses, and interests, and to plan both remedial and new studies (within both the regular, prescribed course and in elective study).

- Examination or assessment of students' progress and achievement should be "open". This implies that students should be told what would be expected of them, how they would be assessed, and how their performance would be judged.

1.2.2 Learning how to deal with problems.

- Problem solving would have to be practised throughout the programme and would be supported by problem-based learning, e.g., by studying a spectrum of problems which occur frequently in the population. Hypothesis generation, data collection, hypothesis refinement, and management planning should thus be integral aspects of the process of learning, through conscious application of the basic sciences. Assessment (examination) should, therefore, emphasize the application of knowledge to deal with problems, and not merely the ability to recall isolated facts from memory.

- Learning to identify whether information is based on sound evidence is essential for the success of continuing education. Those who will still be practising in the first two decades of the 21st century will also need to learn how to adapt to change and how to foster appropriate change.

- Identifying and determining relevant criteria in order to make objective observations and judgements and logical decisions, are common prerequisites for learning from research papers, as well as for identifying changing factors (e.g., social, economic, scientific, technical) which may affect medical practice. Students should, therefore, be given repeated opportunities to become proficient in applying the scientific method to their reading and to the evaluation of a health situation.

1.2.3 Learning the skills necessary for the practice of medicine.

- The skills of interviewing, counselling, and negotiating with patients, and the carrying out of physical examinations, investigation, and therapeutic intervention would require early and continuing practice throughout the undergraduate programme.

1.2.4 Development of personal characteristics desirable for the practice of medicine. This should be fostered actively by constantly exposing the students to appropriate role models and specifically designed learning experiences. For example, the ability to co-operate productively in teams could be fostered, at least in part, through group learning and by discouraging unproductive competition between students. Assessment of progress and achievement should support this endeavour by testing group performance and by avoiding the award of grades.

These considerations and basic decisions were documented in faculty working papers as a deliberate way to achieve consensus within the Faculty.

1.3 The Faculty uses learning objectives for four broad purposes :

1.3.1 To reach consensus among members of the Faculty on what should be learned and how students should be assisted in their learning. The objectives also assist individual full and part-time staff members to familiarize themselves with what students can do already, what remains to be achieved by the students, and what are an individual staff member's responsibilities.

1.3.2 To ensure a valid and reliable assessment of the student's progress and achievement.

1.3.3 To evaluate the effectiveness of each discipline and the effectiveness of the programme as a whole.

1.3.4 To provide students with a guide both to what the Faculty expects them to accomplish and for their own learning.

It is for this last purpose that progressive changes are made across the years of the curriculum. The Faculty provides fewer and less detailed learning materials as students become familiar with the vocabulary of medicine, with the basic concepts of the contributing disciplines, and with textbooks and journals. Eventually the provision of specially written materials ceases altogether, and the students are expected to take full responsibility for finding the relevant information entirely on their own. In the same way learning objectives prepared by the teachers become progressively less detailed and eventually disappear completely when students are able to formulate their own objectives.

As with so many other aspects of the curriculum, much thought continues to be devoted to how to facilitate the attainment of objectives by students. Surveys of students' perception and use of objectives indicate that detailed objectives are valuable in the first year when many students have to grapple with the transition from passive learning to accepting responsibility for their own learning (without the guidance of lectures). In subsequent years students tend to use objectives after they have completed a segment of study to ensure that their competences correspond with the expectations of the Faculty.

It may be that a general statement will suffice towards the latter part of the programme. Figure 1 displays such a "general statement".

FIGURE 1 FORMAT FOR STATEMENT OF OBJECTIVES

When faced with the problem of a patient presenting with..., the student will be able to:

(i) Make decisions in relation to:

- generating hypotheses on possible underlying causes
- gathering and interpreting information from interview and physical examination to refute, confirm, reorder the hypotheses and generate new hypotheses
- requesting investigations and interpreting the significance of the results/reports in relation to the hypotheses

(ii) Make decisions in relation to:

- immediate therapeutic intervention
- therapeutic intervention designed to resolve or stabilise the cause(s) of the problem(s)
- monitoring of the patient's progress
- planning the patient's convalescence, rehabilitation, and follow-up

(iii) Arrive at any of these decisions by:

- analysing the factors involved
- identifying what knowledge/understanding/skill is required and what remains to be acquired by the student
- acquiring that knowledge/understanding/skill and applying it/them to reach a reasoned decision
- justifying each decision by

  applying the sciences basic to medicine
  considering the needs of the patient
  considering the resources available

(iv) Review decisions and outcomes by:

- keeping consistent notes providing data and decisions
- agreeing on criteria with peers
- assessing own decisions against the criteria
- assessing decisions of others against the criteria
- determining how decisions might be improved
- determining what knowledge/understanding/skills should be acquired towards making improved decisions.

Perhaps objectives related to intellectual skills might gradually be replaced by sequences of questions which students are encouraged to study and answer. Once students have learned how to formulate questions or objectives for themselves, such statements could also disappear.

2. MODIFICATION OF THE OBJECTIVES

Any need to modify the original programme objectives of the school was considered by the Undergraduate Education Committee after the first full cycle of the programme was completed and the Faculty graduated its first class of students at the end of 1982. The final evaluation attempted to determine whether the programme objectives had been achieved, or at least whether they had withstood the test of time and reality. This assessment would provide baseline data for the more complex task of following the graduates through their respective careers. Perhaps the major question waiting to be answered is whether the undergraduate education is sufficiently effective that the graduates would not be adversely affected by any conflict between the educational philosophy of the school and actual medical practice as it exists in the real world.

The Review Working Party, established to review the recommendations for change to the curriculum put forth by fulland part-time faculty members, came to a number of conclusions:

.The programme objectives, broadly speaking, remain a valid statement of the fundamental goals for the undergraduate programme.

.The most desirable changes are fundamentally in the area of implementation, rather than in the area of basic philosophy of the programme.

.The currently defined set of educational objectives, although perhaps benefiting from increased integration and other modifications, should remain as defining principles, or major dimensions, of the undergraduate education programme.

.The legitimacy of any educational component can be determined by judging its contribution to the achievement of the programme objectives.

3. HOW THE OBJECTIVES INFLUENCED CURRICULUM CONSTRUCTION, TEACHING CONTENT, AND TEACHING AND LEARNING METHODOLOGY

3.1 Education processes

These processes became apparent during curriculum construction.

(1) All learning should be problem-based and designed to enable students to apply their learning to solve problems of health and ill-health through the use of the scientific method.

(2) Learning should take place in small groups with emphasis on active participation by the students.

(3) There would be no lectures and no formal basic science laboratory exercises.

(4) Scheduled time for required (prescribed) educational activities should not exceed 15 hours in any one week in order to give students ample time for individual or small group study.

The curriculum was developed keeping in mind the following four points:

- Problem solving: including problem-based learning of the basic and clinical sciences, centred around problems which occur frequently in the population.

- Population medicine: the study of medical sociology, statistics, epidemiology, and evaluation of health care delivery, in order to deal with problems of different population groups.

- Professional skills: the gathering, interpretation, and application of data for diagnosis; counselling and therapeutic skills for management.

- Scientific method and critical thinking: for rational decision making in medical practice and research; and for continuing education through the critical reading of scientific papers and reports.

The overriding aim was to help students acquire competence in the application of knowledge, understanding, and skills (intellectual, attitudinal, and practical) in order to carry out their future professional responsibilities. It was, therefore, decided that the four activities should be

integrated as far as possible so that they would support and reinforce each other in the student's learning[1].

Another aim was to provide sequences of learning experiences which would help students to increase their knowledge and skills cumulatively and to retain knowledge and skills through iterative practice and application.

The curriculum had also to provide students with an effective guide to learning in a rapidly expanding field. How could the study of medicine, which is constantly changing, be managed during a period of five years? The curriculum must reflect these changes and the Faculty had to decide what ought to be included and what might be excluded.

3.2 What and how the disciplines are integrated and their contributions determined

To illustrate the Faculty's approach to these problems, this account will concentrate on the problem solving part of the curriculum. Two approaches were employed: 1) an analysis of practical responsibilities expected of a new graduate working under supervision and 2) an analysis of presenting problems and underlying causes.

The first of these was based on an analysis previously carried out by Chew[2] with scientists from both basic and clinical science. Appendix I* covers the young doctor's responsibilities, from reviewing previous notes before seeing the patient, to the stage when the patient's problem has been resolved or stabilized, or the patient has died.

These responsibilities are reflected in the objectives which are defined for each working problem, and illustrated here with an example from the third and last term of study (ten weeks) of the first year.** This example demonstrates how the basic sciences are selected by identifying what knowledge and understanding is needed in order to carry out specified (clinical) tasks related to the presenting problem and selected underlying cause.

3.3 Selecting the working problems

Which presenting problems (e.g., chest pain) and underlying causes (e.g., ischaemic heart disease) should be selected in order to construct an effective course of study?

The Faculty decided that the undergraduate curriculum should concentrate on frequently occuring problems. To this were added four other criteria for selecting problems:

i) potentially life threatening
ii) disabling, or inhibiting normal development in children
iii) treatable
iv) preventable.

These criteria (Table II) are applied for the selection of both presenting problems and underlying causes.[3]

The use of these criteria makes it possible to arrange underlying causes in the order of increasing clinical competencies to solve them, so that "simple" problems can be presented early in the course and problems which demand more from the student can be included later on.

TABLE II LEVEL OF COMPETENCE EXPECTED OF STUDENTS

Classification of Level of Competence (Undergraduate and Postgraduate)	Suspects Presence of Condition	Confirms Presence of Condition			Manages Condition		
		By referral	(Under Supervision) some aspects	(Under Supervision) all aspects	By referral	(Under Supervision) some aspects	(Under Supervision) all aspects
Undergraduate I	YES	-	-	YES	-	-	YES
Undergraduate II	YES	-	-	YES	YES	YES	-
Undergraduate III	YES	-	-	YES	YES	-	-
Undergraduate IV	YES	YES	YES	-	YES	YES	-
Undergraduate V	YES	YES	-	-	YES	-	-
Postgraduate	NO	-	-	-	-	-	-

* See Appendix I on page 148
** See Appendix II on page 163

Does any particular aspect of a discipline have to be learned in finite depth when it is presented for the first time in the study of a problem? Happily, the answer is NO. The sequence of problems is so arranged that there are repeated opportunities to present particular principles or concepts and thus progressively study them in increasing depth. The following time-table (Table III) shows that each of the basic sciences can contribute repeatedly, and each time at a more sophisticated level.

TABLE III
Timetable for the Five-Year Curriculum

THE UNIVERSITY OF NEWCASTLE
FACULTY OF MEDICINE
TIMETABLE FOR THE FIVE-YEAR UNDERGRADUATE CURRICULUM

Academic Year	Term	Phase	Block	Weeks
1	1	I	1 - Introduction to Problem-Solving	10
1	2	II Problems in the Adult	2A (I) - Problems of interruption of function in individuals and in society	4.5
			2B - Problems of acute interruption of function in the limbs	4.5
	3		3A (I) - Gastrointestinal problems	5
			3B - Renal and urinary tract problems	5
2	4		4A (I) - Cardiovascular problems	5
			4B - Respiratory problems	5
	5		5A (I) - Musculoskeletal problems	4.5
			5B - Haemopoietic and endocrine problems	3.5
	6		6 - Problems of the nervous system and of the mind	9
3	7	III Problems in the Adult (cont.)	7A (I) - Problems of sexuality* (40%) 7B - Acute emergencies* (40%) 7C - Skin problems* (20%)	8.5
	8		8A - Acute emergencies* (cont.) (60%) 8B - Eye problems* (20%) 8C - Ear, nose and throat problems* (20%)	8.5
	9		9 - Problems of chronic failure	10
	10		10 - Elective I	8†
4	11	IV Problems of Growth and Ageing	11 (I) - Problems of childbirth and of women	10
	12		12 - Problems of infancy, childhood and adolescence	10
	13		13 - Problems of the elderly	10
	14		14 - Elective II	10†
5	15	V Integrated Clinical Practice	15 (I) - Hospital Practice - 'Medical'	15
	16		16 - Hospital Practice - 'Surgical'	15
	17		17 - Community Practice	15
			CORE TOTAL (weeks)	150

* These Blocks run in parallel, not in series; some may be undertaken outside Newcastle.

† These Electives are excluded from the total of core learning time.

I Blocks within each bracket undertaken in rotation

This iterative approach provides students with repeated opportunities to revise, deepen, and apply their knowledge, understanding, and skills in relation to different health problems and thus maintain their interest in the programme because of its relevance to the real health situation. Perhaps a recent letter from one of the students will illustrate how this approach is perceived by them.

> To the Dean,
>
> Quite often lately, as I work through learning units, things which seemed so difficult a year ago now become clear. I guess that's because I'm now on the /educational/ spiral,* whereas for a long time while on the base of it, everything was new. The anxiety at not having mastered or perhaps remembered something /the/ first time through is eased by the opportunity to re-explore the same area at a deeper level. It's exiting, and, often when I think about it, I'm glad yet again that I'm doing this course. I get a glimpse of the careful, astute planning that lies behind the structure of our learning and I want to thank someone.
>
> From a grateful student

*The "spiral" is intended to provide repeated opportunities for the study of the basic sciences in relation to: problems centred in single body systems (first and second year); problems affecting several systems (third year); problems of growth and development, and problems of ageing (fourth year); and final consolidation through clinical practice in hospital and general practice (fifth year).

How is it determined what contribution each discipline should make to the sequence of problems? Each discipline will have a plan or "discipline map" which identifies the main principles and concepts basic to the practice of medicine. When a working problem is being designed, a teacher of each discipline is asked to indicate what each discipline can contribute to solving it. At this stage professional applicability of that discipline's contribution has to be justified to the other members of the Faculty.

If such a contribution is accepted, but the outline of the patient's problem does not provide a genuine opportunity for the study of this contribution, the "case history" (working problem) may be adjusted appropriately. If, however, this would lead to an unrealistic situation, then that contribution would have to be postponed to another, later problem.

One of the advantages of this iterative approach to learning is that any aspect of medicine can be studied and reinforced repeatedly - so long as it appears in the context of a relevant health situation or problem. At no time are students given the impression that what has been studied (and examined) will not come up again and that it can safely be forgotten.

3.4 Implementing Interdisciplinary Learning

Here, too, the problem-solving approach is used as the illustrative example. The organizational structure of the Faculty has been planned to facilitate interdisciplinary integration. The Faculty plans, implements, assesses, and evaluates the curriculum through a number of committees (e.g., the Education and Programme Evaluation Committees). The committees are given the finances and power to carry out their responsibilities by recruiting staff from the appropriate disciplines within the Faculty. The disciplines (e.g., anatomy, behavioural science, medicine, surgery) do not have the financial and other powers normally accorded to such departments; they merely represent interest groups and are primarily responsible for ensuring appropriate career

development for their non-professorial members, e.g., researchers, fellows, etc.

The Education Committee has established a network of sub-committees to which specific responsibilities have been delegated. However, the main committee has the overriding responsibility for formulating policy and for co-ordinating the activities of its sub-committees. Thus the main committee will appoint a chairperson responsible for a block (e.g., problems of the gastro-intestinal system) who will recruit specialists in different disciplines to help in the planning, implementation, and assessment of this block. The specialist will also liaise with the chairperson of other sub-committees (e.g., professional skills and assessment).

For the first two years of the programme, problem solving tutors assist students to work as a group (eight students) in acquiring the skills of problem solving and in applying the problem-based approach to learning. The tutors are not specialists in the types of problems to be studied; they are usually general practitioners or general surgeons and are thus discouraged from "teaching" their groups, but rather to practise the socratic discourse approach which encourages students to think for themselves.

In a typical week, a problem-solving group tutor will meet a group twice for up to three hours. During the first session a problem situation will be presented to them, either on video tape, audio tape, computer programme, or through a written case history. A Tutor Guide (Figure 2) shows the tutor how to encourage the group to determine how to approach the patient's problem and how they can identify what they should learn in order to resolve the problem.

During the second session the students share what they have learned in order to solve the problem together as a group. The Faculty has to provide specially written study notes, particularly for the early years of the course, because there are no textbooks for integrated, problem-based learning.

Figure 3 represents the covering page of one of the learning units for a working problem in the block on problems relating to the gastro-intestinal system. This page identifies how the study of the learning unit relates to the patient's problem and which of the problem's learning objectives will be addressed.

During this early stage of the course the faculty also provide more detailed objectives for the learning unit itself. Preferably they are given in the form of questions, as illustrated below (Figure 4).

FIGURE 2 ➧ PAGE 144
FIGURE 3 ➧ PAGE 145
FIGURE 4 ➧ PAGE 145

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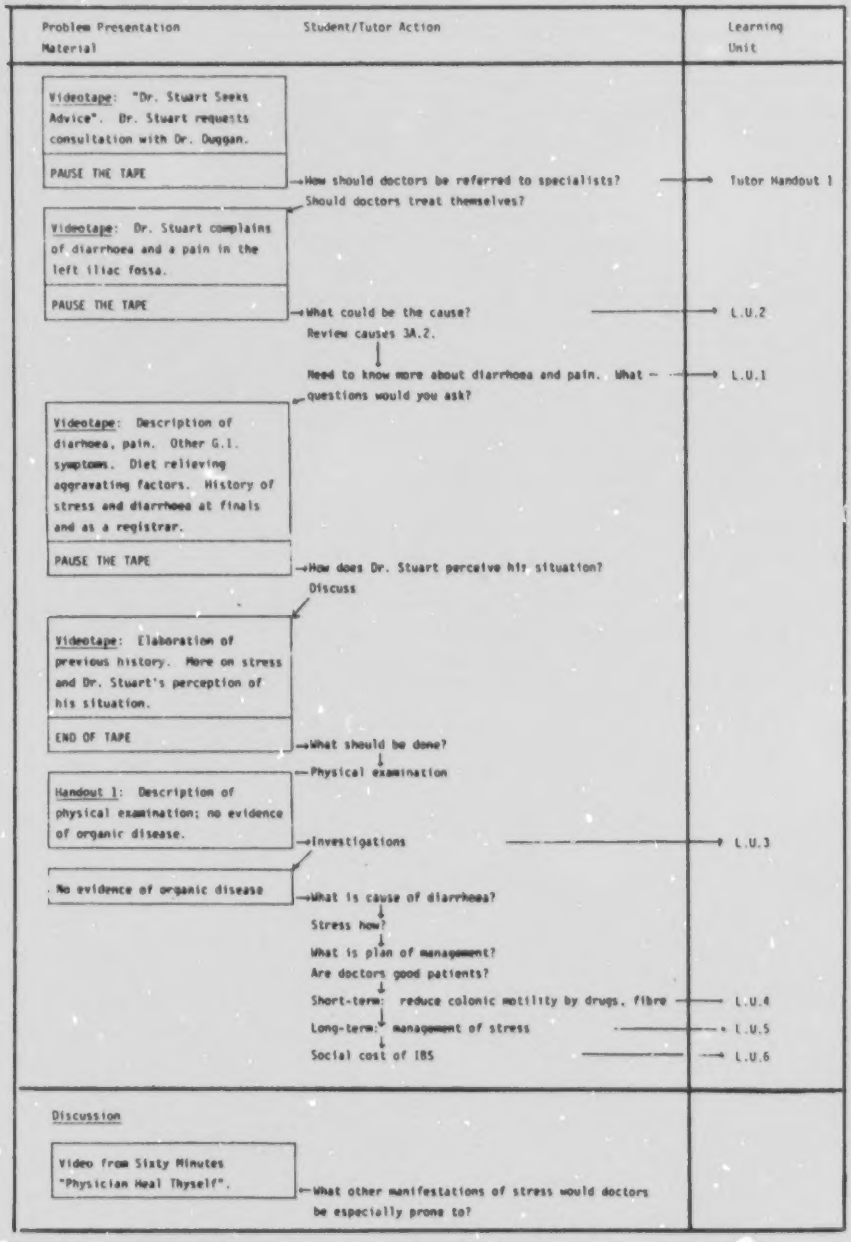
FIGURE 2 Tutor Guide to Working Problem 3A.4


Problem Presentation Material
Student/Tutor Action
Learning Unit
Videotape: "Dr. Stuart Seeks Advice". Dr. Stuart requests consultation with Dr. Duggan.
PAUSE THE TAPE
How should doctors be referred to specialists?
Tutor Handout 1
Should doctors treat themselves?
Videotape: Dr. Stuart complains of diarrhoea and a pain in the left iliac fossa.
PAUSE THE TAPE
What could be the cause?
L.U.2
Review causes 3A.2.
Need to know more about diarrhoea and pain. What questions would you ask?
L.U.1
Videotape: Description of diarhoea, pain. Other G.I. symptoms. Diet relieving aggravating factors. History of stress and diarrhoea at finals and as a registrar.
PAUSE THE TAPE
How does Dr. Stuart perceive his situation?
Discuss
Videotape: Elaboration of previous history. More on stress and Dr. Stuart's perception of his situation.
END OF TAPE
What should be done?
Physical examination
Handout 1: Description of physical examination; no evidence of organic disease.
Investigations
L.U.3
No evidence of organic disease
What is cause of diarrhoea?
Stress how?
What is plan of management?
Are doctors good patients?
Short-term: reduce colonic motility by drugs, fibre
L.U.4
Long-term: management of stress
L.U.5
Social cost of IBS
L.U.6
Discussion
Video from Sixty Minutes "Physician Heal Thyself".
What other manifestations of stress would doctors be especially prone to?

The first, left-hand column of the Guide lists a suggested sequence for providing information about the patient. The central column identifies questions which the students should ask themselves. The right-hand column points to related and specially prepared learning materials. At the end of the session the tutor distributes the learning objectives for that problem, a sheet listing the resources which are available for the study of, and around, the problem, and the materials which have been specially prepared by the students.

FIGURE 3

BLOCK 3A WORKING PROBLEM 4 LEARNING UNIT 6

DR. STUART

PRINCIPLES OF LONG-TERM MANAGEMENT

Learning Unit 4 dealt with short-term management - relieving the symptoms. Before we leave Dr. Stuart and his problem we should consider issues associated with monitoring the effects of short-term management and the formulation of a plan of management aimed at identifying and alleviating those aspects of Dr. Stuart's work and psychosocial environment thought to be associated with the onset and/or maintenance of IBS (Irritable Bowel Syndrome).

OBJECTIVES: 3, 8

LEARNING RESOURCES:

Lachman, S.J. Psychosomatic disorders: a behavioristic interpretation. New York, Wiley, 1972.

Esler, M.D. & Goulston, K.J. "Levels of anxiety in colonic disorders". The New England Journal of Medicine, 288: 16-20 (1973).

Hislop, I.G. "Psychological significance of the irritable colon syndrome". Gut, 12: 452-457 (1971).

"Management of the irritable bowel". The Lancet, September 9, 1978, pp. 557-558.

Maddison, D. "Stress on the doctor and his family". Medical Journal of Australia, 2: 315-323 (1974).

FIGURE 4

OBJECTIVES FOR A LEARNING UNIT (NO.6)

WORKING PROBLEM: CONTROL OF DIARRHOEA

The learning objectives are given here in the form of questions.

Here are some of the questions you may have raised:

1) How long can I keep Dr Stuart on a near-toxic regime of Lomotil? If I take him off Lomotil will the diarrhoea return?

2) Will the high-fibre diet control diarrhoea in the absence of Lomotil? How confident am I that Dr Stuart will continue to comply with the high-fibre diet?

3) How can/does emotional distress as a reaction to work stress influence colonic motility?

4) To what extent were Dr Stuart's emotional reactions to work stress associated with the onset, severity, and maintenance of his diarrhoea?

4. HOW THE OBJECTIVES HAVE INFLUENCED THE EVALUATION OF STUDENTS

The programme objectives determine the process of assessment; that is, how students are provided with opportunities to demonstrate their expected competencies. The main assessment instrument for the problem-solving approach is the Modified Essay Question[6]. This test presents the student with a sequence of situations relating to a patient's problem. The student is provided successively with items of additional information and asked to make decisions. These may relate to hypothesis generation, data gathering and interpretation, hypothesis refinement, or management planning. Frequently there are ancillary questions where the student is called upon to justify his decisions on the basis of underlying concepts from the appropriate basic sciences.

When constructing these tests, the assessors identify which is the objective to be assessed in each test item. Every effort is made to assess the application of what has been learned and not to test merely for recall of information. Each item is analysed further by using modified categories of Bloom's taxonomy of cognitive learning[7] and Elstein's hierarchy of problem solving[8]. The Faculty's model answers for each item of the Modified Essay Question are made available to the students, together with the identification of the objectives for which they have been tested. The students' comments and suggestions are considered by the assessors before the papers are marked. The assessors' judgements are either S for satisfactory or NS for not yet satisfactory, and students are given repeated opportunities for demonstrating that they have corrected any deficiencies revealed by the initial test[9]. These judgements are criterion referenced, and the assessors look for evidence of mastery of the task. Competencies which cannot be demonstrated through a written exercise are tested in other, more appropriate ways.[10]

5. LONG-TERM EFFECTS ON THE HEALTH SITUATION IN THE COUNTRY

The Faculty must now face a real challenge and develop mechanisms for monitoring the many factors which affect change in medical practice. For example, the increasing attendance at accident and emergency departments in England and Wales is now 20 per cent of the population in any one year. This led to the creation of accident and emergency medicine as a hospital speciality, and some 60 senior posts were created in approximately 130 accident and emergency departments.[11] That such a development has important implications for undergraduate education can hardly be denied.

The Medical Faculty at Newcastle University believes that its systematic and analytical approach to developing, implementing, and evaluating its educational philosophy ensures a coherent programme for meeting present needs and one that can be adapted to changes in the needs for health care delivery and changes in the practice of medicine. The monitoring and evaluation of the programme is now extended to include the long-term follow-up of the graduates' performance.[12]

□ □

It would be dangerous to measure with ever-increasing precision and objectivity educational objectives that are easy to measure (intellectual skills) and to neglect the more difficult ones (communication skills) : what must be measured are those that are important for the patient and the community.

□ □

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[1]Expansion of Medical Education; report of the Committee on Medical Schools to the Australian Universities Commission. Canberra, 1973.

[2]Maddison, D. "The University of Newcastle, New South Wales, Australia: developing a new medical school". In: Katz, F.M. & Fülöp, T. Personnel for health care: case studies of educational programmes. Volume 2. Geneva, World Health Organization, 1980 (Public Health Paper No. 71).

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[10]"Assessment instrument No. 163." In: World Health Organization. Catalogue of instruments for the performance assessment of health workers. Geneva, 1981 (Document HMD/81.6).

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APPENDIX I

THE UNIVERSITY OF NEWCASTLE

FACULTY OF MEDICINE

LEARNING OBJECTIVES FOR UNDERGRADUATE MEDICAL EDUCATION[1]

Summary

Learning Objectives define the competencies which the student should be able to demonstrate at the end of a period of study. The Learning Objectives in this paper are restricted to the undergraduate education programme, and are divided into Process Objectives (how students learn) and Content Objectives (what students learn). Distinction is also made between objectives for Individual Medicine (caring for individual patients) and for Population Medicine (caring for groups).

The Learning Objectives will contribute to logical decision-making about what students should learn, and how that learning can be assessed.

Content

Introduction.....2
The Nature of Learning Objectives.....3
Limiting the Expectations - Overall Objective....4
Process Objectives.....5
Content Objectives.....6
Objectives for Individual.....7
Objectives for Population Medicine.....12

[1] Faculty working paper XIV: Learning objectives for undergraduate medical education. Newcastle, New South Wales, The University of Newcastle, Faculty of Medicine, 1977.

INTRODUCTION

Working Paper No. I[1] emphasizes that clear statements of intent should be formulated if the Faculty is to develop coherent policies in research, education, and community involvement. These statements should be as explicit as possible and provide unequivocal answers to the following questions:

(i.) What does the Medical School wish to achieve?

(ii.) How does it intend to achieve it?

(iii.) How will it know that the policies have been implemented successfully?

The overall aim of the Medical School is to contribute to the improvement of health*, in particular in the Hunter Region, by

(i.) advancing health related knowledge through research,

(ii.) improving the quality of health care delivery through the provision of specific services and facilities in the local community.

(iii.) educating and training doctors who are competent in dealing with health needs* as they exist at present, and who can adapt to, and participate in, change related to health care* in the future.

Each of these statements must be amplified in order to answer the above questions.

This paper concentrates on the undergraduate phase of the continuum of medical education. The aims of undergraduate education are set out in detail in another Working Paper (No. VI). However, more specific statements are needed that indicate how these aims are to be achieved and how the educational programme is to be evaluated. The most helpful statements towards these ends are learning objectives that specify what a student will be able to do in order to demonstrate that he has learned succesfully. These objectives should define the competencies which the young doctor will need to possess at graduation to enable him not only to perform satisfactorily in the traditional intern year, but also to develop his subsequent career in any one of the many branches of medicine. The frequent reappraisal of these learning objectives, as a basis for deciding educational strategies, assessment of students' performance, and evaluation of the undergraduate programme will stimulate continuing improvement and adaptation of educational policy to meet the changing needs of medicine.

Health care in present day medical practice is concentrated to a large extent on individual patients in a variety of settings: general practice, specialist practice, hospital, etc. In addition, there is an important range of situations where health care is not so much concerned with the individual but with groups: preventive medicine, epidemiology, occupational medicine, etc. As separate sets of learning objectives have to be specified for these two types of medical practice, it will be helpful to define what is subsumed in individual medicine and in population medicine.

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[1] Faculty working paper I: Educational and assessment strategies. Newcastle, New South Wales, The University of Newcastle, Faculty of Medicine, 1975.

*Health is the condition of soundness of body and mind which enables their functions to be optimally discharged; health needs are the requirements of individuals and groups in relation to maintenance or achievement of health; health care includes all factors (physical, psychological, social, environmental) which contribute positively to health; health care delivery includes all the mechanisms by which agencies external to the individual contribute to his health.

Individual medicine is defined as the delivery of health care to an individual (the "patient") and his immediate family or associates. It includes all those aspects of medicine where an individual patient can be identified and presents to the doctor, even though the individual can be characterized as a member of a defined group.

Population medicine is defined as health care for a community or a group in situations where the care of a single individual is not the primary consideration. A significant number of health problems can only be resolved through the organization of appropriate resources and the development of community-wide preventive strategies. This broader view of the practice of medicine will contribute in the preparation of future doctors to adapt to change and to participate in change.

From every viewpoint, tomorrow's graduate will be expected to practise in a period of major change, social, economic, environmental, and scientific. The demand for health care already exceeds the financial ability of even the world's wealthiest nations to satisfy it. It is likely that demand will continue to outstrip the supply of resources; rational decisions about the most needy areas for the deployment of these scarce resources cannot be made at the level of individual medicine, which is still the overwhelming preoccupation of contemporary medical education.

It is therefore necessary to emphasize the existence of the entity defined as Population Medicine.

The Nature of Learning Objectives

Learning objectives are statements that define the competences which students should be able to demonstrate at the end of a course of study. Competencies includes related aspects of factual knowledge, understanding of concepts and principles, intellectual and physical skills, and attitudes. Once it has been agreed what students should be able to do by the end of the undergraduate course, logical decisions can be made not only on what students should learn but also on how their achievement should be assessed. Learning objectives provide clear criteria for monitoring student progress (formative assessment) and for assessing student achievement (summative assessment).

Outline of the Discussion

The following discussion revolves around two identifiable sets of learning objectives which should guide our educational and assessment strategies :

a.) Process objectives - how we expect students to learn;
b.) Content objectives - what we expect students to learn.

Since professional education and training are directed towards the performance of tasks in particular settings, the paper proceeds to an examination of more detailed objectives for the practice of medicine under supervision immediately after graduation, both in the hospital and in various community settings; it should be emphasized that this analysis does not make the assumption that the practice of medicine after graduation will take place exclusively in the hospital. From an analysis of problems encountered by the newly qualified doctor working under supervision, it is possible to derive:

a.) a list of the responsibilities he is likely to be expected to bear;
b.) the competence needed to fulfil these responsibilities;
c.) and thus the knowledge, skills, and attitudes to be acquired.

In addition to considering the competence required for the practice of individual medicine, we have defined competencies which we regard as reasonable to expect in a new graduate who will also have to deal with problems arising in population medicine which must be solved by non-clinical techniques: epidemiological analysis, administration, legislation, and social action.

Limiting the Expectations

Undergraduate education is but the first step in the continuum that includes postgraduate and continuing education. It will, therefore, be helpful to begin with a statement that delineates the limits of what students can be expected to do by the end of the undergraduate programme.

OVERALL OBJECTIVE

At the time of graduation, the student will be able to demonstrate a standard of competence which is appropriate for the responsibilities assigned to a newly qualified doctor. This will also serve as the foundation for future career development in clinical, laboratory, epidemiological or community practice, research or administration.

Two limitations should be emphasized. First, the newly qualified doctor is not expected to be a complete doctor, a miniature specialist, or a research scientist, but he should be able to progress in any postgraduate direction. Second, the required standard of competence must vary from objective to objective.

While there will be some objectives where a high level of competence can be expected, other objectives will only be attained fully during the period of postgraduate education. It will be an important task for the Faculty to define the level of competence it expects to be reached for each objective.

As a first step to this end, we have divided medical problems into two major categories. Those problems in contemporary medical practice that the newly qualified doctor is expected to be able to deal with will be considered as Undergraduate Problems. Other problems that require considerable further education and training in a specialty of medicine before they can be tackled successfully are Postgraduate Problems and thus not part of the undergraduate curriculum.

The problems which the newly qualified doctor is expected to deal with are those which have either a high prevalence or incidence in the population, or relate to common events in contemporary health care delivery, or are potential causes of death or serious disability unless promptly recognized and treated, or are problems which could have been avoided or minimized by earlier preventive action. Such problems we have designated Priority Problems. Even within these Priority Problems (e.g., chest pain) there will be conditions that are relatively rare or too complex for the new graduate (e.g., hypertrophic subaortic stenosis). We have, therefore, decided to grade the level of competence that will be expected in relation to each of the conditions which come within the area of Undergraduate or Priority Problems. These levels of expected competence are summarized in Table II, which is more fully discussed in a separate paper on the The Concept of the Priority Problem (Working Paper XII).

Although these levels of competence are defined in terms of coping with clinical problems, the achievement of Process Objective I (see below) will in each case demand a demonstration of the application of appropriate scientific knowledge and understanding essential for adequate clinical performance.

The Objectives

Most objectives can be used to determine not only what students should study, but also how students might best be helped in their studies and how they should be assessed. However, some objectives will have an important overall influence on decisions concerned with methods

of learning and assessment. These objectives have been listed as Process Objectives. As other objectives will primarily help in determining the content of the curriculum they have been listed as Content Objectives.

All objectives should be examined critically for their relevance to the Overall Objective (see above). This will ensure that undergraduate education is constantly in tune with the realities of medical practice.

Process Objectives:
Objectives Primarily Leading to Decisions
on Educational and Assessment Strategies

I. Prior to graduation, the student is expected to demonstrate that he is willing and able to:

Approach a medical problem scientifically by:
- -defining the problem;
- -formulating hypotheses or conjectures about the nature and likely causes of the problem;
- -obtaining relevant data and making observations to confirm or
- -refute the hypotheses/conjectures, ranging from the molecular, cellular and organ levels, through man as an individual to man in groups or communities;
- -integrating and interpreting the data and observations;
- -testing the hypotheses;
- -drawing conclusions;
- -taking necessary action;
- -testing action based on the hypotheses;
- -communicating results.

II. Prior to graduation, the student is expected to demonstrate that he is willing and able to:

Act as leader, collaborator, coordinator or informant in a team, when the nature of the problem calls for a team approach, whether for learning, research, or health care. Such a team may include members of the other health and welfare professions.

III. Prior to graduation, the student is expected to demonstrate that he is willing and able to:

Manage his own learning with a view to further and continuing education by :

- monitoring his progress in the acquisition of information and skills and in the modification of attitudes;

- evaluating his own performance, and by recognizing the limitations of his knowledge, understanding, skills, and attitudes, and taking appropriate remedial action;

- evaluating conclusions based upon data by considering the quality and appropriateness of the design, measurement, and analytical methods used to obtain and present the data.

IV. Prior to graduation, the student is expected to demonstrate that he is willing and able to:

Develop and maintain personal characteristics and attitudes that are part of professional life, for example:

- ability to cope with uncertainty and ambiguity in his professional work;
- sensitivity to personal assets, potential, limitations, and emotional reactions;
- a humanitarian approach to patients and their families;
- responsibility, reliability, and honesty;
- curiosity and initiative;
- precision in the use of words.

Content Objectives -
Objectives Primarily Leading to Decisions on Educational Content

Continuing advances in medical science and consequent changes in medical practice counsel against the inclusion in the curriculum of a great body of detailed knowledge some of which will be outdated even by the time the student graduates. It is, therefore, desirable to concentrate on those skills, with related understanding and knowledge, that are most likely to be of permanent value. This consideration leads to the specification of two objectives.

I. Prior to graduation the student is expected to demonstrate that he is willing and able to:

-interview patients and their families in the clinical setting;

-formulate the presenting problem and also obtain details of non-presenting problems, whether these are active or not;

-make observations from the interview and examination of the patient, eliciting and interpreting symptoms and signs;

-make clinical decisions based upon this information, and counsel the patient and his family accordingly.

II. Prior to graduation the student will demonstrate that he is willing and able to :

Assume responsibility, under supervision, for the management of PRIORITY problems - and other problems after consultation - in relation to individual patients and the community.

This objective also refers to responsibility for the management of problems, other than priority problems. This requirement is intended to help the student to recognize the limitations of his competence and to use every opportunity to enhance his knowledge and skills through participation in teamwork, consultation and use of the literature.

The achievement of both these objectives will require the graduate to possess the scientific knowledge, understanding and skills which constitute the basis of intelligent medical practice.

In order to make more detailed statements on the responsibilities of the newly qualified doctor in relation to individual medicine and population medicine, it will be necessary to consider the setting in which the newly qualified doctor is expected to function. In individual medicine, most medical problems do not commence or present in the hospital, nor are they managed principally in the hospital. Undergraduate education would, therefore, be incomplete were it not to offer students opportunities to attain sufficient competence to assume some responsibility in relation to medical problems in situations other than the hospital. Nevertheless, the similarities in the clinical situation, whether based in general practice, health centres or in hospital, far exceed the differences. Accordingly, a common set of clinical responsibilities can be defined, and the following section defines more detailed learning objectives for individual medicine. However, the student will be required to assess whether his patient's immediate needs are best met in hospital, specialist practice, general practice or in another health care situation.

The remainder of this paper is divided into two sections. The first will deal with objectives linked to the responsibilities inherent in the clinical internship. The second section considers the learning objectives pertaining to expected behaviour of the new graduate who would work as a community-based intern, for example within the community health services of the Hunter Region of the New South Wales Department of Health or to some extent within other services (e.g., occupational health). While this arrangement does not exist at the present time, it is the logical consequence of our educational philosophy (Working Paper IV).

Objectives for Individual Medicine

These objectives have been set out in the form of an analysis * of the clinical responsibilities of the newly qualified doctor who is working under supervision during his clinical internship. It will be seen that the analysis is based on individual patient problems. Each objective can be related to the priority problems which have been defined. This can also serve to identify those aspects of the basic sciences, including the behavioural sciences, that are essential for the satisfactory management of a given priority problem at the level of the newly qualified doctor.

These general objectives are subdivided to correspond with the usual stages of the doctor/patient encounter. They are based on the hypothesis that diagnostic activity is essentially the formulation and testing of a number of hypotheses as to the cause(s) of the patient's problem(s). Objectives which relate to this particular activity will be found near the end of the list (Objective 12), although they apply throughout the doctor/patient encounter.

It will be clear that these general objectives constitute a very full check-list which covers every eventuality. Whilst the new graduate will be familiar with this list, it is acknowledged that, in practice, not all of these states will be relevant to every patient, and that part of the skill of efficient hypothesis confirmation and refutation lies in knowing which steps may safely be omitted.

* Full acknowledgement is made to an unpublished analysis prepared by Professors W. Chew (Medical College of Georgia), R. Tschirgi (University of California at San Diego) and C.E. Engel (formerly Director, British Life Assurance Trust for Health and Medical Education, London).

1. Emergency management

The student will :

1.1 Recognize the need for emergency management;

1.2 Select and implement appropriate emergency management, even though confirmatory data may not yet be available;

1.3 Recognize the need to inform the supervisor and not attempt to manage such situations for an extended period without assistance from a more senior colleague;

1.4 Recognize situations which, while not immediately life-threatening or disabling, require prompt specialist attention.

2. Before the patient is seen

The student will review available information to:

2.1 Identify active problems likely to need immediate action;

2.2 Identify inactive problems which require review, including risk factors which require modification for disease prevention;

2.3 List common causes of these problems.

3. Information volunteered by the patient and/or family

The student will, by observing and listening :

3.1 Recognize distinct or unequivocal signs in the patient's general appearance;

3.2 List the patient's problems in order of priority;

3.3 Develop and list hypotheses about the common* causes of the patient's problems, the common life-threatening or disabling causes of the patient's problems, and the common treatable causes of the patient's problems.

4. Verbal information elicited by the student

The student will observe and listen to the patient and:

4.1 Ask specific questions to establish the details of each problem;

4.2 Ask specific questions to discriminate between the causes of the problems;

4.3 Ask questions to determine whether the patient's complaint is the reason for seeking help, or whether there are unexpressed problems;

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* Throughout this document, 'common' refers to those aspects of medicine that are subsumed in our Priority Problem - see Working Paper No. XII on The Concept of Priority Problems and Table I. (Editor's Note: The paper referred to in this part of Appendix I is one of 16 faculty working papers published by the University of Newcastle Faculty of Medicine from 1975-1982.)

4.4 Ask scanning questions to establish a general idea of personality, patient's perception of his needs, personal circumstances, potential health hazards (environmental and/or occupational), state of other organ systems, etc.;

4.5 Use the data to amend the list of problems and hypotheses about common causes.

5. Physical examination

The student will :

5.1 Recognize which organ systems or body areas require special attention;

5.2 Examine the patient to scan for indicators or suggestions of other disease;

5.3 Examine for and recognize all but subtle or equivocal signs;

5.4 Decide for each physical finding whether it is normal or abnormal, or whether he is unable to determine;

5.5 Consider each abnormal finding in the light of the lists of common problems and possible causes.

6. Preparation of summary

The student will:

6.1 Write an accurate, well-organized, complete and legible problem-orientated summary;

6.2 Decide which problems and causes have been confirmed with reasonable certainty;

6.3 Decide what further information is needed;

6.4 Review the summary with the patient and/or family, and discuss the next steps with them.

7. Family and contacts

The student will:

7.1 Initiate, assist in or arrange for the necessary or statutory action after consultation with the patient/family.

8. Health authorities and police

The student will:

8.1 Perform or assist in the necessary notifications.

9. Confirmatory data

9.1 Decide what confirmatory data are desirable or essential :

9.1.1 List the data needed to confirm the common causes of the patient's problems;

9.1.2 Decide which data should be collected, and justify, by considering relevance, risk, availability, reliability, specificity, complexity, patient discomfort, and cost;

9.1.3 Decide which data to collect by referral;

9.1.4 Decide upon setting for data collection (hospital, outpatient, etc.), and justify.

9.2 Communicate with the patient and/or family the preliminary results, need for further data and/or referral, and what these steps involve for the patient/family in terms they can understand, and answer their questions.

9.2.1 Explain to the patient and/or family the preliminary results, need for further data and/or referral, and what these steps involve for the patient/family in terms they can understand, and answer their questions.

9.2.2 Decide what modifications to the proposed steps are indicated in the light of this interview.

9.3 Perform, assist with or arrange for the investigations.

9.4 Interpret the results of the investigations:

9.4.1 Decide whether the results are normal or abnormal for this patient;

9.4.2 Decide whether the data relate to any of the patient's other problems.

10. Selection of management

The student will :

10.1 Decide whether to refer;

10.2 Select the most appropriate management and justify, by considering prognosis, sequence of treatment, efficacy, hazards, discomfort, availability, cost, and epidemiological data on active risk factors;

10.3 Select the most appropriate setting for management and justify, by considering urgency, efficiency, hazards, discomfort, availability, socio-economic factors.

10.4 Communicate with the patient/family:

10.4.1 Explain to the patient/family the causes of the patient's problems, the need for referral, decisions on management, what these steps involve for the patient/family, and answer their questions;

10.4.2 Decide what modifications to the management plan are indicated in the light of this interview;

10.4.3 Discuss and decide on arrangements for the family.

11. Implementation, monitoring, and revision of management

The student will :

11.1 Prepare an adequate summary for referral to a specialist;

11.2 Initiate arrangements for the family;

11.3 Direct, perform or assist in management;

11.4 Assess the patient's response to management:

11.4.1 List the variables to be monitored;

11.4.2 List the data needed to monitor these variables;

11.4.3 Decide which data should be collected, how frequently and by whom, and justify, by considering relevance, risk, availability, reliability, sensitivity, specificity, complexity, patient discomfort, and cost;

11.5 Collect data to monitor management:

11.5.1 Explain the investigations to the patient, and answer his questions;

11.5.2 Perform, assist in, or arrange for investigations.

11.6 Evaluate the patient's response to management:

11.6.1 Analyse the data in terms of rate of response, patient's subjective response, side-effects, toxicity, complications;

11.6.2 Decide whether the problems have been resolved, have been stabilized, or are following the expected course at the expected rate;

11.7 Revise treatment, and justify.

12. At any time during the preceding stages

The student will:

12.1 Review all available data up to that time, and synthesize recently acquired earlier data, to construct or amend a problem list for that patient, which includes:

12.1.1 Active problems which have led the patient to seek medical care at that moment;

12.1.2 Active problems which may be perceived by the doctor but not by the patient, which require follow-up, intervention, or modification for disease prevention;

12.1.3 Active problems which are not the cause of the consultation;

12.1.4 Inactive problems which deserve review if their inactivity is to be maintained;

12.2 Confirm the accuracy of data supplied by the patient and other informants, where possible;

12.3 Repeat earlier stages in the light of newly acquired data (iterative process);

12.4 Prepare a summary and recommendations, and use these as a basis for appropriate consultation with the supervisor;

12.5 Consult an information source+ with respect to uncommon* problems, causes, complications, etc.

13. Problem resolved

The student will :

13.1 Decide on and arrange for or assist in measures designed to prevent or minimize recurrences and complications;

13.2 Decide on and arrange for rehabilitation and/or convalescence;

13.3 Decide on and arrange for follow-up;

13.4 Communicate with the patient/family to explain and advise on these measures and to answer their question.

14. Problems stabilized

The student will:

14.1 Decide on and arrange for or assist in maintenance therapy;

14.2 Decide on and arrange for rehabilitation and/or convalescence;

14.3 Decide on and arrange for follow-up;

14.4 Communicate with the patient/family to explain and to advise on these measures and to answer their questions.

+An information source can range from more senior colleagues to textbooks and original papers, according to the nature of the enquiry.

*'Uncommon' refers to aspects of medicine that we have designated as Postgraduate Problems.

NOTE: The purpose of Objective 12.5 is to stress that the specification of knowledge and other competence with respect to common problems (as defined in the footnote to Page 155) does not limit the student's horizons, but will emphasize the importance of the student's active search for knowledge as a vital part of continuing his education.

15. Death of patient

The student will :

15.1 Confirm death;
15.2 Assist in informing relatives and authorities;
15.3 Assist in obtaining permission for, and in performance of, post mortem examinations;
15.4 Prepare final summary of case;
15.5 Assist in preparation of death certificate.

Summary

i.) These general objectives apply to any patient encounter.

ii.) They can be applied to each priority problem and thus determine the knowledge, understanding, skills and attitudes which the students will need in order to manage the problem.

iii.) From the knowledge, understanding, skills, and attitudes will derive the Working Problems from which the students will learn.

iv.) The objectives will be used for the assessment of student competence in relation to each priority problem.

Objectives for Population Medicine

These objectives have been spelled out in considerable detail where they differ from those defined for individual medicine. They have been grouped under the major aspects of population medicine: identifying needs for health care, identifying health care resources, meeting the needs for health care, reducing the need for health care, and assessing process and outcome of health care. Competencies that are thought to be required for two or more of these tasks are listed first under General Competence.

1. General Competence

The student will:

1.1 Describe the existing health and welfare services (private and public) in the local region;
1.2 Obtain demographic and morbidity data, and interpret these data;
1.3 Interpret reports critically in relation to design and analysis of the investigation, including observer variation (e.g., B.P. readings, questionnaire data);
1.4 Explain the processes whereby environmental and other changes may be attempted within the complex constraints of medical ethics, finance, political factors, individual unwillingness to change, research, and preventive manoeuvres (e.g., through existing organizational channels, by negotiation with management and labour, by approach to politicians, by health education);
1.5 Assess validity and importance of concern by individuals and groups in matters related to health and be able to take a public stand where validity and importance are established.

2. Identifying Needs for Health Care

The student will:

2.1 Use basic demographic morbidity and environmental data to make a simple prediction about health needs, and determine the chief causes of death by taking into account the data for various factors (e.g., social class, age, ethnic origin, occupation);
2.2 Interpret findings from research into the significance of risk factors within populations:
2.2.1 Co-operate with others involved in such studies;
2.2.2 Identify possible links between potential putative agents (e.g., virus illness, occupation) and subsequent disease;
2.3 Obtain data on health risk associated with industry, school sickness absence, and reported infectious disease, and interpret data to determine

-economic impact of disease and economic priorities,
-preventability and level of preventability (1^{o}, 2^{o},3^{o});

2.4 Identify high-risk groups for whom preventive care is especially urgent (e.g., poor, unemployed, children of broken homes, one-parent families, families of alcoholics, lonely and bored wives of shift workers, ethnic minorities, the elderly, paraplegics, burned/battered children);
2.5 Explain the principles of caring for a community faced with a disaster (e.g., aeroplane crash, epidemic).

3. Identifying Health Care Resources

The student will :

3.1 Suggest an effective manpower profile for the delivery of health care to a community on the basis of epidemiologic, demographic, and economic data;
3.2 Explain to non-medical enquirers the cost of medical care (private and public) to the community, and the issues concerning the allocation of finite resources in the light of conflicting demands (e.g., organ transplants, renal dialysis, etc. versus drug abuse, geriatric needs).

4. Meeting Needs for Health Care

The student will:

4.1 Institute simple procedures to halt the spread of infectious disease through a family;

4.1.1 Specify the procedures necessary to halt the spread of infectious disease through a school, factory, community;

4.2 Cooperate with others charged with the responsibility of surveillance of controlled infectious disease and of conditions which may follow from the introduction of new environmental hazards (pollutants, etc.);
4.3 Identify preventive strategies for high risk groups (e.g., those listed in 2.4);
4.4 Discuss with non-medical enquirers the medical ethical issues involved in such matters as abortion and euthanasia;
4.5 Interpret for non-medical enquirers international health needs, particularly those of the poorer countries.

5. Reducing Need for Health Care

The student will:

5.1 Plan and implement with others an immunization programme, e.g., for infants and schoolchildren;
5.2 Give a factual explanation of his approach to screening for presymptomatic and symtomatic disease in the community;
5.3 Participate in health education by interpreting epidemiological information to community groups in relation to environmental factors (e.g., pollution) and behaviour that threatens the maintenance of good health (e.g., drug abuse, road accidents, lack of exercise, lack of appreciation of the needs of minority groups);
5.4 Participate in sensitizing community groups to factors that precipitate ill health (e.g., poverty, malnutrition, overpopulation).

6. Assessing Process and Outcome of Health Care

The student will :

6.1 Assess the appropriateness of the situation in which patients' current needs are being met;
6.2 Identify operational problems in organizations responsible for providing community health care and suggest why they are occuring;
6.3 Interpret findings from a health care evaluation investigation and suggest what improvements in the system might be practicable;

6.3.1 Co-operate with others in implementing a simple evaluation investigation;

6.3.2 Design a simple comparison study using two population groups to assess differences and their significance in response to two different treatments or exposures.

NOTE: Students will be given an opportunity to integrate these component competencies, possibly with the help of a project that will take them through each of the aspects in turn. Such a project would require intermittent involvement of the student during the greater part of the course.

14 September, 1977

APPENDIX II

FACULTY OF MEDICINE

THE UNIVERSITY OF NEWCASTLE, N.S.W.

LEARNING OBJECTIVES

BLOCK 3A Working Problem 4 1981

Title: Diarrhoea

Undergraduate Condition: Irritable Bowel Syndrome

OBJECTIVES:

When confronted by a patient who complains of diarrhoea, the student will be able to:

1. Suspect that irritable bowel syndrome (I.B.S.) is a possible cause of the patient's symptoms.

2. Confirm that I.B.S. is the cause of the patient's symptoms, partly under supervision and partly by referral, by:

   2.1 Interviewing the patient to determine the presence and nature of diarrhoea, and the presence of other symptoms, and stating whether these support or weaken the hypothesis that I.B.S. is the cause of the symptoms.

   2.2 Interviewing the patient to determine the presence of previous attacks, definite factors within the patient's psychological history, disturbances of personality, life crises (acute or chronic), which are known to be associated with I.B.S.

   2.3 Performing physical examination, concentrating on the abdomen, and stating whether the findings strengthen or weaken the hypothesis that I.B.S. is the cause of the symptoms.

   2.4 Listing the investigations which might be ordered and deciding which to order in what setting, justifying each in terms of relevance, risk, availability, reliability, complexity, discomfort, and cost.

   2.5 Requesting or carrying out the necessary investigations and interpreting the results, stating whether each result strengthens or weakens the hypothesis that I.B.S. is the cause of the patient's problem; evaluating the usefulness of each investigation ordered in terms of its contribution to clarifying the patient's problem.

   2.6 Presenting a written and oral summary of the patient's problem and its cause, based upon the findings at interview, examination, and investigation.

3. Formulate a plan of management for the patient and justify it by considering pathogenesis, including emotional factors, prognosis, efficacy of treatment, hazards, discomfort, availability, cost, and patient compliance, including:

   3.1 Deciding whether to refer the patient to dietitian, clinical psychologist, psychiatrist; and justifying the decision.

   3.2 Monitoring management and revising as necessary.

In order to achieve these objectives, the student should be able to:

4. Demonstrate knowledge and understanding of the processes of:

4.1 peristalsis;
4.2 water and salt transport across epithelia;
4.3 visceral pain;
4.4 physiology of defaecation;
4.5 autonomic and hormonal control of gut motility by:

4.5.1 describing colonic transport and peristalsis
4.5.2 describing colonic secretions
4.5.3 describing the relationship among colonic motility, intraluminal events, chemicals and hormonal influences, and autonomic events
4.5.4 describing the mechanisms controlling defaecation
4.5.5 describing the absorptive functions of the colon
4.5.6 describing in general terms the role of colonic micro-organisms.

5. Demonstrate knowledge and understanding of the gross and microscopic structure and function of the colon by:

5.1 Identifying on a model or prosected specimen the constituent parts of the large bowel from the ileo-caecal valve to anus; the gross anatomical features of the colon and its appendages; the arterial blood supply of the colon and rectum;

5.2 Drawing on the living subject the surface projections of the caecum and colon;

5.3 Demonstrating on a model or prosected specimen or drawing the gross anatomy of the male and female pelvis including the muscles of the pelvic floor, and the sphincter muscles of the anal canal.

5.4 Illustrating on simple line diagrams the sympathetic and para-sympathetic nerve supply of the colon and rectum, outlining the function of these nerves in relation to gut motility.

5.5 Illustrating the typical route of pain fibres from the colon and rectum to the spinal cord.

5.6 Demonstrating the areas to which large intestinal pain may be referred.

5.7 Identifying in a histological preparation or photomicrograph the tissues of the colon and rectum including the muscular and epithelial layers, their specialized cells and innervation.

5.8 Describing the anatomical basis of referred pain.

6. Demonstrate knowledge and understanding of the principles of pharmacological management of irritable bowel syndrome by:

   6.1 Giving examples of specific chemical mediators of altered intestinal motility and their pharmacological antagonists;
   6.2 Listing possible pharmacological strategies to reduce enhanced bowel motility in irritable bowel syndrome and explaining the mode of action of the drugs;
   6.3 Explaining why a drug regime is unsatisfactory for Dr. Stuart in the long-term.

7. Demonstrate knowledge and understanding of the role of dietary fibre in health and disease by:

   7.1 Listing its major constituents and its major sources;
   7.2 Describing the major changes which take place to its constituents in the small and large gut under the influence of digestive enzymes and gut bacteria;
   7.3 Explaining the effect of dietary fibre on gut motility;
   7.4 Providing advice on a high fibre diet.

8. Demonstrate knowledge and understanding of psychophysiology by:

   8.1 Identifying information relevant to patient reactions to environmental and psychosocial factors (such as work, personal, family and social situations) that should be elicited in an interview with a patient;
   8.2 Discriminating between those elements of information which are likely to be caused and those which are likely to be derived from the presenting condition (I.B.S.);
   8.3 Describing how to assist a patient to gain satisfying insight into the relationship between emotional factors and bowel function;
   8.4 Outlining the limitations of this therapeutic approach and recommending referral for further appropriate therapy, including psychotherapy.

9. Demonstrate knowledge and understanding of the morbidity and mortality of I.B.S. by:

   9.1 Estimating the magnitude of the social cost of I.B.S. and outlining strategies to reduce the incidence of I.B.S.

PERSONAL NOTES

5.5

CASE STUDY NO. 5

UNIVERSITY CENTER OF HEALTH SCIENCES, BEN GURION UNIVERSITY OF THE NEGEV, BEERSHEVA, ISRAEL
COMMENTARY by S. Abrahamson

This case study includes a number of different references to the use of learning objectives in the education of health professions. The brief history at the beginning gives the reader some sense of the exitement of founding a new school in a country which itself is only thirty-four years old. It is evident from the description that the school was founded to meet carefully identified health-care needs in a particular area of the country. It is made quite clear that this school responded to changing health needs of the society which it was to serve. Thus, it is important to note that those changing health needs are what became the basis for the institutional learning objectives for the new school.

It was the description of health needs that preceded the development of objectives and that gave rise to certain expectations concerning the purpose and function of the school. These, in turn, were expressed in terms of the role of the physician who was to be graduated from the school. This sequence is the ideal process of educational planning.

In this case study there is an excellent discussion of the reasons for stating learning objectives and the ways in which they can and are being utilized. There is evidence that the learning objectives at this school were used to the decided advantage of all parties concerned: faculty, students, health-care practitioners, and the community. One important way in which learning objectives were used is to communicate. As in the other cases reported in this document, there is evidence that discussions on curriculum, teaching, and evaluation were facilitated when the desired outcomes of the educational programme were understood by everyone concerned.

Throughout the case study there is reference to the use of multi-disciplinary teams. It is clear that this institution made good use of the inter-disciplinary approach and that the existence and utilization of institutional learning objectives developed through this approach facilitated their work. Indeed, a multi-disciplinary team formulated the first institutional objectives one year before the school opened. These objectives listed on page 172, are well worth a careful review since they stress those components of performance for which the graduates are expected to be prepared.

Interestingly enough, a different "level" of objective is illustrated here although it is not referred to in that way. Following the statement of institutional objectives, which is described as "general and all-embracing", there was a need for a more specific description of a graduate's behavior, one that would allow for flexibility in adapting to changing situations. This led to the development of a mastery description, i.e., a complete set of analysed responsibilities of a competent practitioner. Once again, we have an example of that ideal merging of task description and learning objectives.

When the study comes to the first level of intermediate objectives, it points out that this medical school does not have a conventional departmental structure and that they therefore constructed "theme objectives". Departmental structure all too often has a terribly restrictive influence on curriculum development; thus, it is important to note that intermediate-level objectives can be developed without departments. Indeed, it is probable that the resulting statement was far more useful since departmental objectives focus on the individual disciplines and almost always result in teaching objectives rather than learning objectives. Furthermore, while they may state what the learner might be expected to do at the end of the course, they are frequently not relevant to the expected professional tasks of the graduate.

While on the subject of departmental structure in the medical school, it is interesting to note the reference on page 5 to the factors which often severely distort the best of intentions in more than one educational institution. An examination of this section might help other institutions to guard against the pressures which often cause schools to fall back into the traditional educational pattern. The case study brings out power-seeking considerations as one of the most important forces resisting change.

There is an interesting discussion of the need for any institution to remain open to change. While the report states that the "planners did not structure a procedure for renewal", it is clear that the school has remained cognizant of, and faithful to, "the essential principle of openness to change".

With regard to evaluation, the case study includes some interesting descriptive material about the ways educational planners use their learning objectives as a basis for course evaluation. It is also interesting to note that these educators have devised a way to provide badly needed specificity in learning objectives in the intellectual domain (Bloom's cognitive domain). They achieve this specificity by adding three questions to each objective: one on the level of recall (Bloom's knowledge level); the second on the level of application (comprehension and application levels); and the third on the level of problem solving (analysis, synthesis, and evaluation levels).[1]

All in all, the case study makes good reading. Like the one on Newcastle, it is enhanced by the excitingly new and innovative curriculum which uses "...institutional objectives... as an instrument designed to maintain a rational approach to health, health care, and medical education, rather than as ends in themselves".

□ □

It is a highly questionable practice to label someone as having achieved a goal when you don't even know what you would take as evidence of achievement.

R.F. Mager

□ □

[1] Bloom, B.S., ed. Taxonomy of educational objectives; the classification of educational goals. Handbook I: Cognitive domain. New York, David Mc Kay, 1956.

The Faculty of Health Sciences, Ben Gurion University of the Negev, Beersheva, Israel.
Based on various publications of Faculty members *

INTRODUCTION

In 1973, the Government of Israel authorized the establishment of a University Centre for Health Sciences at the Ben Gurion University of the Negev in Beersheva. The first component of the Centre was opened in 1974 with a class of 34 medical students.

The Negev is the southern part of Israel. It is a semi-arid desert of 14,109 square kilometres and constitutes 60% of the country's land mass. The population of this region in 1975 was close to 400,000, including some 47,000 nomad Bedouin.

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The economy of the area is mainly agricultural. However, industrial development i increasing. The principal city of Beersheva (population 135,000) is located 54 miles from Jerusalem and 67 miles from Tel-Aviv. It serves a hinterland of 177 settlements, villages, and towns. Most of the health services in the Negev are provided by two agencies : The Workers' Sick Fund of the General Labour Federation (Kupat Holim) and the Ministry of Health. Kupat Holim is both the insurance carrier and the provider of communityand hospital-based curative services for over 90% of the population in the Negev (134 urban and rural ambulatory care clinics and two hospitals : 700 beds in Beersheva and 64 beds in Elat).

The Ministry of Health maintains a 340-bed hospital in Ashkelon and is responsible for providing preventive services throughout the region. The division of functions between the two agencies is not always clear. There is often overlap and duplication. In addition, supplemental specialized health-related facilities are operated by other branches of the government and by several voluntary organizations.

Graduates of Israeli medical schools tend to select careers in specialty medicine and to cluster around the academic medical centres. That choice of career is influenced by experience during medical studies. Primary care, on the other hand, is usually provided by immigrant physicians who generally have not been prepared for this type of practice.

The challenge facing medical education in Israel is not due to numbers alone. Rather, it involves the kinds of physician to be trained if the range of health needs of the country is to be met. The decision to establish a fourth medical school in a country of approximately 4 million inhabitants was made on the assumption that the programme of studies would correspond to the national needs in health care and that it would contribute to the improvment of the health care system of the country and, in particular, of the Negev region. The merging of medical education and medical care was, therefore, the basic principle upon which the school was founded.

Responding to this need and following its basic principle, the school set for itself three main goals:

-to develop and implement an integrated system for the delivery of preventive, curative, and rehabilitative care to the total population of a defined region;

-to merge this integrated health care system with the University Centre for Health Sciences under a single authority;

-to educate within this new framework, a different type of physician whose primary objective would be to provide service in an integrated hospital-community health care system.

1. HOW LEARNING OBJECTIVES WERE DEVELOPED

1.1 Analysis of the role of the physician

Several sources of information were tapped by the founders: their personal analyses and conclusions were one source since all of them were familiar with and concerned about health care. Valuable input was also obtained from a report of a governmental committee appointed several years earlier which summarized the health care delivery systems in the country from the viewpoint of consumers, providers of care, and educational institutions; and additional information was obtained from epidemiological data on morbidity in the country and, more specifically, in the Negev region.

By coordinating the educational programme with the entire health care delivery system under a single authority, it became possible to examine the role of the physician in different health care settings in terms of the competence required. This also offered the opportunity to bring about changes in the role of the physician within the system.

The role of the physician has not escaped the impact of social and technological change. As epidemic diseases recede, chronic disabling conditions emerge as the major health problems. Adequate control of these requires intervention by different categories of health professionals over longer periods of time and involves considerations related to the quality of life.

Technological advances have made available methods of intervention which are effective but which tend to foster the examination and care of a patient in terms of isolated disease conditions rather than a whole individual. There is public pressure for change in the health care system to counter these methods. In the course of such change, the role of the physician may have to undergo modification.

The commitment of the Faculty of Health Sciences at the Ben Gurion University (BGU) is to educate physicians whose primary objective will be to provide medical service in a combined hospital-community health care system. This commitment implies that along with the basic elements of medical education, the primary care dimension of medical practice will be emphasized, which in other medical schools is usually accorded to specialty medicine. Two consequences are anticipated : first, a significant proportion of students will be attracted to careers in primary care and, second, all students, whatever their eventual career choices, will have become sensitive to the importance of the primary care approach in health development as well as have acquired competence in delivering primary care.

In order to begin to develop a community-oriented medical curriculum, the role of the physician in primary health care must be defined in terms of the following tasks:

- facilitating entry of the patient into the health care system
- providing preventive personal health care services
- integrating and assuring continuity of care through the various phases of illness
- participating in outreach programmes to serve the broader health needs of the population.

Competencies required to meet the responsibilities implied in each of these tasks were identified and criteria set for their performance, thus providing educational objectives. Also included are skills in health education, management of health services, and health care evaluation, which are not usually part of the curricula of most medical schools.

It was anticipated that the approach adopted at Beersheva would have far-reaching implications. Since the programme of studies was designed to facilitate the achievement of competency-based objectives, the basis on which these objectives were developed assumed considerable importance. Priority was given to the acquisition of all the skills needed to practise medicine (intellectual, practical, and communication). These are not only responsibilities which physicians assume in delivering health care, but also those which they might need in the future. Of no less concern than those skills are the values which guide students when performing them. These can be identified in performance analysis, thereby contributing to the definition of attitudinal objectives.

Objectives derived from professional competencies constitute Beersheva's response to the problem of sampling posed by the information explosion in medicine. Once professional competencies were identified, they were ranked according to priority in the practice of community-oriented medicine. Those considered essential were included in the core component of the curriculum and students are expected to acquire a specified level of proficiency in these. Teachers are held accountable for their students' achieving this outcome and curriculum time and other instructional resources and allocated accordingly.

1.2 The function of objectives

In planning and carrying out the educational process, the different experiences, inclinations, beliefs, and values of faculty members all come into play. Each one's perception of health needs and learner needs, as well as each one's self-interests will vary considerably. These factors can often deter the attempts made in schools of health sciences today to innovate the educational process. As a result, the goals and objectives of educational programmes are not always clearly defined and what usually ensues is a falling back into the old traditional pattern. It was imperative, therefore, that BGU state explicitely its objectives from the outset. Moreover, it was understood that clearly stated educational

objectives could be used to improve the evaluation of the entire programme, as well as each segment of it. In attempting to create a new type of physician, on-going self-assessment would be imperative.

The explicit objectives of BGU were utilized extensively in planning the curriculum. From a detailed analysis of the physician's expected behaviour, the planners were able to derive intermediate objectives, breaking down each one into smaller components (tasks) to be acquired through the course of studies. The specific learning objectives facilitated BGU's attempt to integrate disciplines, thereby avoiding gaps and redundancies, and to design "umbrella themes" by selecting health problems which would require an interdisciplinary approach to solve. The objectives served as a means of communication between the planner/teacher, teacher/teacher, student/teacher and student/student in curriculum development, teaching, and learning.

Last but not least, specific learning objectives are intended to promote self-learning by guiding the students to acquire the desired professional tasks. If learning objectives are ambiguous, they discourage students from self-learning far more than the effort and discipline that such learning demands.

BGU formulated learning objectives at general, intermediate, and specific level for the following purposes :

a) to define the expected end product in terms of the future physicians' behaviour, in order to communicate the institution's philosophy and prevent a return to traditional methods;
b) to permit rational planning of a problem-oriented rather than subject-oriented curriculum;
c) to enable evaluation of the learner, the teacher, and the entire programme;
d) to facilitate and promote self-learning;
e) to facilitate communication between all the constituents of the school: students, teachers, planners, and evaluators.

The BGU objectives will be presented, beginning with the institutional ones (general) and ending with the instructional objectives (specific). The rationale and the way these objectives were formulated will be explained, as well as how they are used for evaluation.

1.3 Institutional objectives

The BGU institutional objectives were formulated one year prior to the opening of the school. The multidisciplinary team of planners which finalized these objectives, under the leadership of the Dean, comprised medical educators, an epidemiologist, a sociologist, an immunologist, an administrator, and several clinicians of various disciplines. It was a self-nominated team which shared common views on the deficiencies of the health care delivery system and the ways to rectify this situation.

BEN GURION INSTITUTIONAL OBJECTIVES

Upon completion of the programme of medical studies, a graduate will have acquired knowledge, abilities, and attitudes to:

A. Perform professional services within a community health care system compatible with the overall policies of the Centre for Health Sciences.

1. Identify and define present and future community health problems, and work to resolve such problems by the planning, implementation, and evaluation of preventive or remedial programmes.

2. Use clinical skills, knowledge, original observations, and appropriate records to identify, diagnose, manage (prevent, refer, or treat rationally) and follow-up the health problems of patients, taking into account the physical, psychological, or sociocultural aspects.

3. Work as a leading partner in a health care team.

4. Educate the population and motivate them to improve their health.

B. Continually increase his/her level of competence.

1. Take part in postgraduate training (residency programmes, specialization, courses, etc.) and in teaching (students and colleagues).

2. Periodically evaluate his/her professional activities; recognize his/her educational needs; select appropriate learning resources; and evaluate his/her progress.

C. Aid the development of health sciences by engaging in teaching and research; and seek solutions to new health problems of his/her patients, community, or health care system with which he/she is not familiar.

D. Maintain and develop personal characteristics and attitudes required for professional life, such as personal integrity, sense of responsibility and dependability; and the ability to relate to, and communicate with, patients and colleagues; to respect them, and show concern for them.

The institutional objectives were conceived in behavioural terms and describe the optimum performance that could be expected from the new school's graduates. Although they relate to general rather than specific competencies, they stress those kinds of competencies in which the BGU graduates are expected to differ from gratuates of a traditional medical school.

1.4 Mastery description

The institutional objectives are general and all embracing. They are neither sufficiently specific to prescribe instructional activities, nor do they deal with the physical, financial, and political constraints that are so much a part of reality. Furthermore, they respond only to major changes in the health situation. Therefore, more specific objectives were needed, ones that would describe in detail the expected performance of a graduate and that would at the same time be flexible in that they could be adapted to environmental changes. Naturally, such objectives would have to accurately reflect the institution's philosophy. The mastery description is a document that states the institution's educational philosophy and the institutional objec- tives. It is a complete set of analy- sed responsibilities of a competent practitioner, or "master performer".

The mastery description of BGU was developed by a multidisciplinary group that included family physicians, communityand hospital-based paediatricians, communityand hospital-based nurses, clinical psychologists, a social worker, a behavioural scientist, and a representative of the general population nominated by a neighborhood committee. The group, working through subcommittee task-forces, started its weekly meetings soon after the opening of the school and completed its task within a year.

The mastery description is arranged under four headings : clinical skills; public health skills; interpersonal skills; and organizational and managerial skills. The first, clinical skills, includes a detailed description of all the activities of a practising physician, and the conditions under which they are performed. It also includes a list of diseases, health problems, and conditions with which the graduate should be familiar as well as their management, and the intervention skills that this entails. The selection of diseases and patient problems included in the curriculum, and the kind of intervention skills considered appropriate to these conditions, were determined by:

(a) the prevalence of the condition in the area and in the country; and

(b) the responsiveness of the condition to treatment.

This latter criterion ensured that management of even rare problems would become required knowledge if treatment could significantly alter or prevent the condition. Specific skills that may have been omitted from the mastery description could be introduced later, or excluded if they'd been included previously. For example, the graduate could be required to interpret chest X-ray film, yet not be expected to be

able to actually perform the filming. In the event that portable x-ray apparatus becomes available in the peripheral clinics, such technical skill would be introduced, such as what happened with electro-cardiography (ECG).

The public health section deals with the detection of specific health hazards, the identification of populations at risk, health services for nomadic populations, health education, etc., at the levels of both the community and the individual patient.

The third section, interpersonal skills, describes the graduate's expected interpersonal behaviour in specific terms, giving both the nature and the process of the encounter. An example of such a description follows, and demonstrates how these skills relate to the institutional objectives.

The fourth section describes the managerial responsibilities of the physician and includes the functioning of a health team, the communication channels among health workers, and the patterns of communication with community officials, both formal and informal.

AN EXCERPT FROM THE MASTERY DESCRIPTION

2. Attitudes

2.1 Attitudes towards the individual

2.1.1 While the physician is evaluating the situation (collecting the data) and identifying the problem, he should:

-create a rapport with the patient, relating particularly to what is said "between the lines".

-try to define the objectives of the patient's and the physician's treatment.

-succeed in identifying all of the patient's medical problems, and determine which of them is central.

-do his best to understand the patient's concept of his disease and symptoms from the patient's personal and cultural viewpoint.

-look for the effects of the patient's illness on his daily life and role in society.

-try to assess the effect of the patient's present life cycle on his problem.

-be aware of his own feelings towards the patient and know how to deal with them.

-identify situations which demand ethical decisions.

2.1.3 While the physician is planning patient management he should:

-include the patient in the planning as much as possible.

-respect the patient's autonomy by avoiding enforcing the physician's own values, beliefs, and prejudices.

-preserve the patient's right to privacy and self-respect.

-make decisions which take into consideration the individual's environment and the critical events that have occurred in his life.

2.1.4 During the follow up, the physician should:

-continue to treat the patient until a suitable solution to his problem has been reached.

-acknowledge his own limitations and turns to consultants if necessary.

-maintain his responsibility towards the patient even after consultants are called in.

2.2 Attitude towards the family

2.2.1 While the physician is evaluating the situation (collecting data) and identifying the problem, he should:

-determine the individual's status within the family life cycle (courtship, marriage, pregnancy, birth, bringing up children, maturity, children leaving home, lone couple, widowhood).

-evaluate the role that economic, psychological, and social resources play in the distribution of tasks within the family.

-define possible interactions between the family, the patient, and his disease.

2.2.2 When the physician plans management, his diagnostic, therapeutic, and educational decisions will take into consideration:

-the patient's status in the family cycle, his role in the family, and the family's economic, psychological, and cultural resources.

-the specific family's cultural background and moral values.

Although the mastery description is expressed in terms of actions, some amount of factual knowledge is nevertheless implied in each one. The mastery description has already been changed several times as a result of accumulated experience. It is thus a dynamic and responsive instrument that maintains the relevance of the institutional objectives in the face of certain environmental changes.

Since each institutional objective may be reflected in more than one set of behaviour, so, too, each set of behaviour relates to more than one institutional objective. However, the organizational outline of the mastery description is different from that of the objectives. While learning objectives reflect the different aspects of the professional profile, the mastery description delineates the various activities associated with different responsibilities.

2. HOW THE LEARNING OBJECTIVES HAVE INFLUENCED CURRICULUM CONSTRUCTION, TEACHING CONTENT, AND TEACHING AND LEARNING METHODOLOGY

The curriculum in Beersheva is designed to reflect the three major institutional goals mentioned before (p.3). In the process of curriculum development, however, these are considered in the wider context of issues which confront medical education throughout the world today. Among the issues which have been of particular concern are :

a. the changing role of the physician and its educational implications;
b. the effect of the information explosion on curriculum;
c. the issue of relevance in medical education;
d. the introduction and sustaining curricular change; and
e. assessment of the impact of medical studies.

2.1 The classification of objectives

An analysis of the institutional objectives and the mastery description reveal several topical objectives which differ from one another by (a) their degree of specificity, and (b) the kind of knowledge, skills, and attitudes they stipulate. They are called intermediate objectives. For example, prevention can be carried out through the following activities : defining populations at risk; screening activities and early detection methods; health education; immunization; patient compliance, etc. For each such activity, specific health conditions can be defined. For example, prevention of hypertension, coronary heart disease, breast cancer, infectious diseases, malnutrition, etc. For each of the possible combinations of the above-mentioned activities and conditions, a basis of scientific knowledge, relevant psychomotor skills, and appropriate attitudes may be defined.

The difference between the three levels of objectives may be illustrated as follows : The institutional objectives are organized according to general areas (e.g., cure, prevention, education, research), each one implying several activities or behaviours. The mastery description explicates these activities (e.g., communication, screening, physical diagnosis), some of which may relate to more than one area. The intermediate objectives arise out of the medical themes or health problems that are being dealt with through the activities.

Intermediate objectives are closely related to subject content. The content itself can be categorized into different levels of specificity ranging from general content (e.g., infectious diseases, cancer, birth) to a vast number of detailed items. The intermediate objectives link the knowledge and the anticipated use of this knowledge in ever-growing specificity.

In order to clarify these links and to provide a better understanding of the utilization of objectives for instruction, a short description of the BGU curriculum follows.

2.2 The BGU Curriculum

The educational spiral concept of curriculum construction adopted at BGU is based on the premise that learning is more effective and better retained when it is reinforced concurrently across diverse components of the curriculum and over successive phases of the programme of studies. Three principal curricular components are delineated: basic sciences, clinical competencies, and public health. Instruction in each component begins in the first year and continues at successive levels of sophistication throughout the studies. This approach stresses ongoing utilization of knowledge from the basic sciences to solve problems simulating those encountered in professional practice. The complexity of problems and level of simulation increase progressively as students advance through the curriculum.

The focus of the basic sciences in the first year is the biology programme. The multiple solutions found in nature to problems of survival form a background against which the human situation is considered. Small group discussions and laboratory experiences encourage formulation of questions and the search for methods by which they can be answered.

The second-year curriculum is shown in some detail in Appendix I, the BGU Medical Curriculum. The studies in the second year start with courses in cell biology. These encompass general molecular and cellular biology (the gene, the membrane, energetics). Both mammalian and bacterial cells are discussed. The biochemistry course is closely coordinated with the one on cell biology and provides the necessary prerequisites, as appropriate. The two courses overlap in part. The general virology course starts as a tool for inquiry into cell biology, and continues with general concepts of virology. The pertinent chapters of general physiology (diffusion, osmosis, transport) are introduced into the appropriate cell biology courses (e.g., membrane).

Cell biology is dealt with through three separate "tracks". The first "track" is an introduction to genetics and immunology, stressing the cellular and molecular basis of each one as it is related to clinical practice. The second one, taught at the same time, deals with the neuron and the muscle. The student is confronted with highly differentiated cells, which require application of the general principles of general biology. The pertinent principles of general physiology (e.g., electrophysiology), histology (nervous and muscular tissue), and pharmacology (autonomous drugs) are also incorporated. The third one deals with general microbiology, and follows the same pattern of providing a conceptual basis without covering comprehensively the whole discipline. The appropriate principles of virology, microbiology, immunology, and pharmacology (e.g., antibiotics), together with the pertinent principles of general pathology (inflammation, infection), are carefully coordinated and complement each other.

Students participate in a multifaceted programme of clinical studies. At the same time, they take courses in the basic medical sciences. The clinical programmes of infectious diseases, paediatrics II, and breast cancer run throughout the year and provide the student with the opportunity to apply the acquired knowledge and skills to real life clinical situations.

Skills in communication and human relations, observation and diagnostic procedures, should be acquired in order to reach additional objectives of early clinical exposure not directly related to the traditional basic sciences.

The second year concludes with tumour biology. Detailed case histories are presented to groups of students, who are then expected to apply their knowledge of cell biology, virology, immunology, genetics, physiology, psychology, and pharmacology, as well as of behavioural sciences and physics (radiation), to solve a given problem. In-depth, self-learning of selective material by different students serves to stimulate small group discussions with the teachers acting as resource people.

Two "general themes", infectious diseases and cancer, provide a framework for integrating the introductory courses in most of the basic sciences with several clinical disciplines. These examples illustrate "horizontal integration"; the relevant basic medical sciences are learnt and applied clinically through self-learning activities based on problem solving. However, no systematic coverage of basic sciences is attempted.

The third phase, starting in the third year, is comprised of a series of integrated modules of the organ system arranged in clusters; these alternate with clinical clerkships in related fields. The various disciplines which were introduced in Phase II are now applied to individual organ systems. A problem-oriented case method of teaching complements the systematic approach to organ systems. Case studies, generally presented by students, are drawn from all stages of the natural history of disease and reflect issues which arise in hospital wards, outpatient clinics, and primary care settings.

Integrated modules of the organ system are alternated with clerkships until the end of Phase III. An initial cluster of modules, based on the theme of homeostatic maintenance, includes the haematological, cardiovascular, respiratory, gastrointestinal, renal, endocrine, and nervous systems. This is followed by clerkships in medicine and paediatrics. Clerkships in obstetrics/gynaecology, surgery, and orthopaedics are preceded by modules on the reproductive and musculoskeletal systems. The first of two clerkships in primary care follows. The remaining modules on the mind, the integument, and the special senses, are linked with clerkships in psychiatry, dermatology, ophthalmology, and otorhinolaryngology. Phase III ends with a second round of clerkships in medicine, primary care, and surgery, and an intersystem module which summarizes everything.

2.3 Intermediate objectives

The interdisciplinary planning team for the development of intermediate objectives included the coordinator and key teachers of each course under discussion; the coordinators of other courses taught simultaneously, the content of which had relationship with the course under discussion; the coordinators of prerequisite courses; and representatives of the Curriculum Development Unit. Some of the team members had to be physicians. There were no specifications as to their clinical discipline, but primary care practitioners were preferred. The physicians in the group were self-selected, according to their interest in, knowledge of, and involvement with, the planned course.

The first item was the selection of subject matter. The team identified behaviours expressed in the institutional objectives and the mastery description; these became the intermediate objectives. The Curriculum Development Unit then proceeded to relate them to educational activities from the various disciplines and courses, thereby evolving a syllabus that would express the purpose of the school.

In schools having a departmental administrative structure, the first level of intermediate objectives is departmental objectives. These are the competencies the students should be able to demonstrate, based on specific knowledge of the subject matter. However, BGU avoids a departmental structure, both on the faculty organizational level and with regard to curriculum planning and implementation. Thus the term "theme objectives" has been adopted. BGU also has what they call "discipline objectives"(e.g., the student should be able to identify the causative agent of gastrointestinal infections by appropriate laboratory techniques). A large number of their objectives are interdisciplinary, as illustrated by the following example:

> The student should be able to follow up the patient after his or her discharge from the hospital by house calls, patient and family interviews, visits to the neighborhood clinic and discussions with the familypractitioner.

While this objective appears to relate to the area of community or family practice, it was in fact conceived by paediatricians for the fourth year paediatric clerkships and adopted without modification by the internal medicine task force (years five and six). Another example of a theme objective is derived from the second-year curriculum, a tumour biology course :

> Given a (written simulation of) patient suffering from neoplastic disease, the student should be able toanalyse the case considering biological, pathophysio-logical, pathological, environmental, sociopsychological, and epidemiological factors. The student should also be able to suggest a management programme, based upon the above mentioned considerations.

Several features characterize these theme objectives. First, although stated in terms of competencies, they are not always detailed enough to describe a specific activity. Second, they are heavily related to the subject matter (or the content). Third, in describing the behaviour, they do not explicitly differentiate between intellectual, practical, and communication skills. Finally, they do not usually include criteria for acceptable performance. Thus an additional breakdown of the theme objectives is mandatory.

In order to develop more operational objectives, the "theme objectives" need to be broken down; these have not been given specific names at BGU. For some theme objectives only one further step has been necessary, to obtain adequate specificity, while others have required several. This method of formulation is especially useful in differentiating between the three domains of behaviour (intellectual, practical, and communication skill).

2.4 Specific learning objectives (instructional)and instructional units

Instructional objectives is a term applied to learning objectives at the operational level. Sometimes theme objectives fulfill this function; more often they have to be broken down. Instructional objectives guide both the teaching/learning process and evaluation, and specify the content. The following is an example of instructional objectives.

EXAMPLES OF INSTRUCTIONAL OBJECTIVES

In observing a newborn in the delivery room, the student should be able to describe him in terms of:

a.) general appearance
b.) form and deformities
c.) colour
d.) weight and length
e.) head and chest circumferences
f.) vocalization
g.) motor activity

In order to do so, the student should be able to perform the appropriate measurements and observations, and accurately calculate an Apgar score.

(Pediatrics II, first year)

The student should be able to follow up an acutely ill cardiac patient throughout the hospitalization period, and to identify and describe the developmental stages of the disease, by:

a.) observing the patient's appearance and behaviour daily.
b.) assessing how the patient feels through both expressed and observed reflection of pain, discomfort, etc.
c.) measuring vital signs, including weight (daily), and monitoring possible changes.
e.) assessing daily the relevant laboratory test results of kidney and liver functions and electrolyte and enzyme levels.

> The student should be able to summarize the above-mentioned data in terms of acute, subacute, and recovery or deterioration phases, and to attribute each phase to the pathophysiological processes which might have taken place.
>
> (Internal Medicine Clerkship, year 4)

Not all instructional objectives have the same clarity. In the psychomotor domain (practical skills) there is usually no room for doubt as to the required performance. Objectives in the intellectual domain, while most numerous, are the most difficult to formulate. The solution adopted by BGU has been to supplement each stated objective with samples of questions. It has been required (although not always fulfilled) that three questions follow each cognitive objective : one on a recall level (Bloom's knowledge level); the second on an application level (comprehension and application levels); and the third on a problem-solving level (analysis, synthesis, and evaluation levels).[1]

The objectives are further supplemented by a list of key words to guide self-learning. Following these there is a required and recommended bibliography. Finally, a list of prerequisites enumerates the competencies the student should possess before he can meet the instructional objectives under discussion. These include knowledge, laboratory or clinical skills, and, where appropriate, communication skills.

The instructional objectives, key-words bibliography, guiding questions, and prerequisites make up an instructional unit which is available to students prior to each learning experience. Appendix III includes a table which presents an example of a unit of instruction of biochemistry. With the addition of "correct answers" to the guiding questions, these instructional units correspond to the Keller plan, or to what Guilbert describes as self-learning packages.[2]

3. HOW THE OBJECTIVES HAVE INFLUENCED THE EVALUATION OF STUDENTS

3.1 Evaluation of student performance

The mechanism for evaluation at BGU has been described in detail elsewhere.
A clear distinction is drawn between formative and summative (or certifying) evaluation. The former involves a series of self-examinations, exercises, and post-tests designed for feed-back purposes and remedial teaching. Summative evaluation involves a series of examinations on the basis of which decisions are made concerning the students' advancement. The student's professional skills are evaluated by a variety of evaluation instruments. The interpersonal and practical skills are evaluated by Video Tape Recording and detailed check lists. The intellectual skills (ability to integrate isolated facts and solve problems) are assessed by a comprehensive examination which takes place at the end of the first and second years, and is made up of test items from all disciplines, organized into patient problems. Both the content for the test items and the checklists are drawn from the guiding questions found in the units of instruction. The test items carefully sample the units of instruction in such a way that a predetermined proportion sample of items is drawn from a given number of units of study (usually one test item for each two units). Thus the evaluation system directly measures the achievement of objectives.

3.2 Programme evaluation and revision of objectives

The mechanism by which objectives are evaluated at the course level is the debriefing session. This term refers to the meeting held on the completion of each course or major segment of a course. The sessions are attended by the key instructors involved in the planning and teaching, student representatives, members of the Curriculum Committee for that specific year, and a representative of the Curriculum Development Unit. In addition, coordinators of courses which are given simultaneously and which are related to the course under discussion, and coordinators of prerequisite courses, may also attend the session.

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[1] Bloom, B.S., ed. Op. cit.

[2] Guilbert, J.-J. Educational Handbook for Health Personnel. Revised edition. Geneva, World Health Organization, 1981 (WHO Offset Publication No. 35).

The agenda for the debriefing session is as follows : the course director briefly reviews the objectives of the course and presents a summary and general impression of student performance. Student representatives then present their assessments, which are based upon either a questionnaire administered and responded to by the students, or on a series of interviews that they have conducted with their peers. The discussion covers the following: the degree to which the educational objectives of the course, as presented in the units of instruction, have been achieved; the time allocated for each instructional unit; reading assignments in terms of quantity, quality, clarity, and availability; the teaching methods and aids used; and finally, the effectiveness of the instructor as a teacher. If a course has involved laboratory or clinical work, these are also evaluated. In the event of a negative evaluation, an attempt is made to ascertain reasons for failure to achieve objectives.

The debriefing session concludes with recommendations for improving the learning experience. This may involve revising the objectives, the teaching methods, or the logistics of the educational programme. In some situations the debriefing session may result in objectives being transferred to a course where they might be more appropriate and ultimately achieved, or they may be omitted completely. The conclusions reached at one debriefing session may have repercussions for courses to be given at other times.

During the final stages of the debriefing session a schedule is designed for replanning the course. Both faculty and students contribute to this process, with the latter frequently assuming major responsibility. In the event a course receives a strong negative evaluation, a task force of students and faculty is nominated to completely review all aspects of the course.

This method of programme evaluation has been found to be highly effective in stimulating both the reformulation of objectives at the instructional level and as a means of maintaining the momentum for curriculum renewal. It also provides a way to involve students in this crucial process.

MODIFYING/REVISING LEARNING OBJECTIVES

The objectives of the new school were developed as a response to a particular situation. At the time they were formulated it was clearly stated and understood that they were "not carved in stone", and that should changes occur in the health needs of the population, or in the health care delivery system, then the objectives might well have to be modified. The fact that the institutional objectives have been neither changed nor replaced during the first eight years of the school's existence does not mean that they are not still subject to change. Despite their commitment to update the objectives, the planners did not structure a procedure for this. Although this is not necessarily a flaw, there will have to be some provision for instituting change.

The BGU institutional objectives are perceived as an instrument designed to maintain a rational approach to health, health care, and medical education, rather than as ends in themselves.

4. EFFECT ON THE HEALTH SITUATION IN THE COUNTRY

Innovation in medical education often comes about because of circumstances which are specific to individual institutions rather than as a result of any planned change at national or international level. The impact of innovative curricula that have been developed as a response to community health needs must therefore be judged in terms of the goals set by the particular medical school and the constellation of resources and constraints within which it is implemented. Considerable caution is necessary when attempting to generalize on the basis of results obtained at any one institution.

Of primary concern is the impact of innovative curricula in medical schools on the quality of health care. Curricular change may result in an increased capability of graduates to meet the health needs of the community. The distribution of career choices may respond more to the needs of the health care system, and the quality of care provided by graduates may improve these factors. However, they are influenced

by circumstances other than undergraduate medical education. Choice of specialty and selection of geographical area in which to practise may depend on many personal factors.

Because of these many influencing factors, it is difficult to predict the impact of undergraduate medical education on the quality of physician performance, particularly in comparison with that of subsequent postgraduate studies. However, the approach described in this case study rests on the premise that competencies and attitudes acquired during medical school do indeed exert a significant effect on the future behaviour of the student.

In addition to its impact on the students, the curriculum at Beersheva also impinges directly on the health care system in the Negev. Physicians and other health workers at community health clinics, hospitals, and public health centres implement the teaching programme according to the slogan, "he who teaches serves, and he who serves teaches". Health care facilities used for educational purposes foster communication and open the way for the development of new functional relationships. A reassessment of current medical practice and, to a limited extent, the introduction of innovations, have been stimulated and facilitated because practitioners are the academic staff.

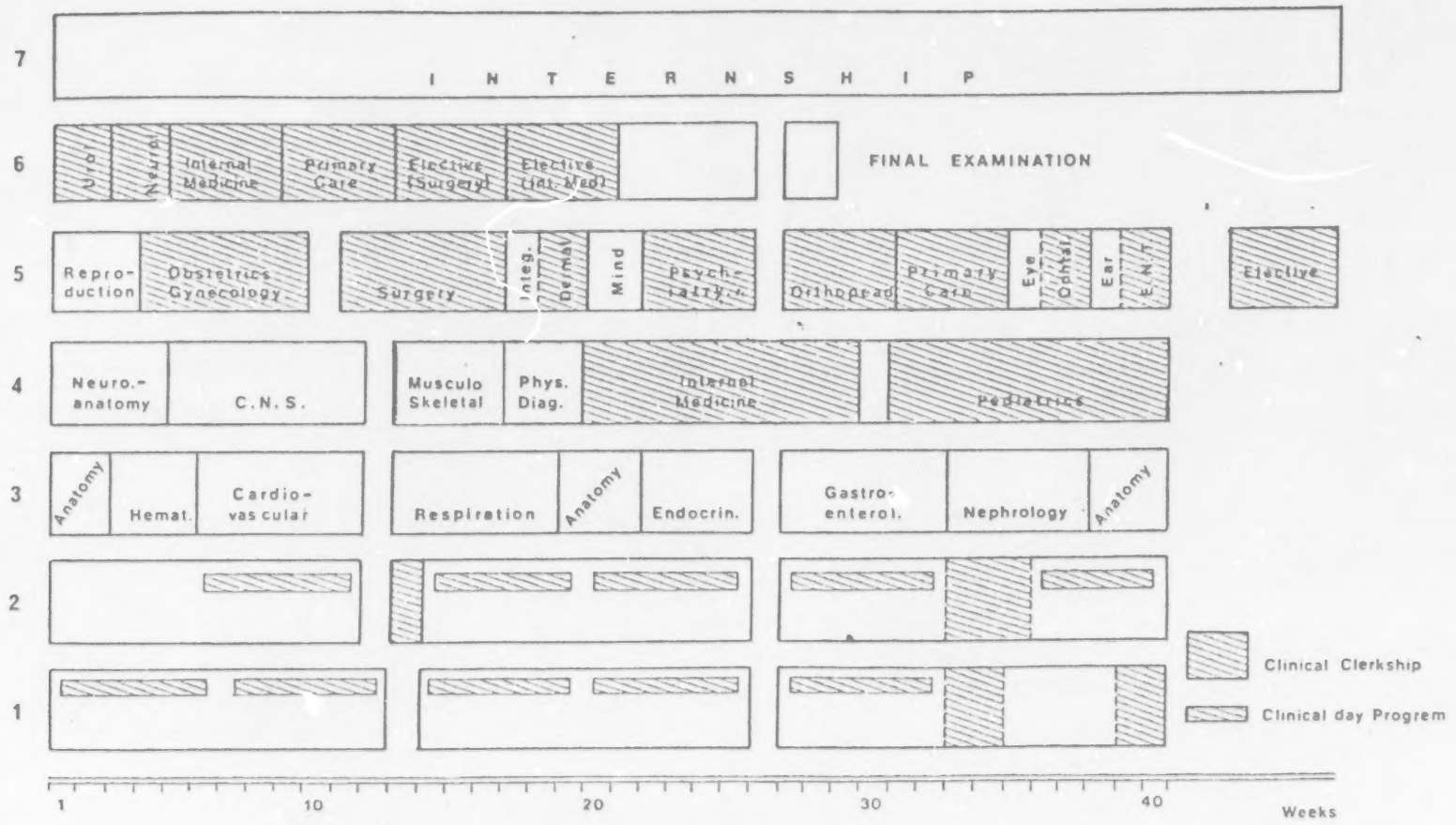
Furthermore, since November 1981 many of the students have been volunteering at least one year for primary care in clinics in the Negev. This has improved the quality of medical practice and has provided excellent and comprehensive care even in the most remote towns and villages. More important, they have effected changes in the system of health care delivery, making it more comprehensive, more efficient, and of better quality. Because of their training, they emphasize disease prevention and early detection; they make full use of the health team (nurse, social worker, health educator); and they have created a model system of consultation with their teachers and, through that, a system of continuing education.

5. LEARNING BY OBJECTIVES - A SUMMARY

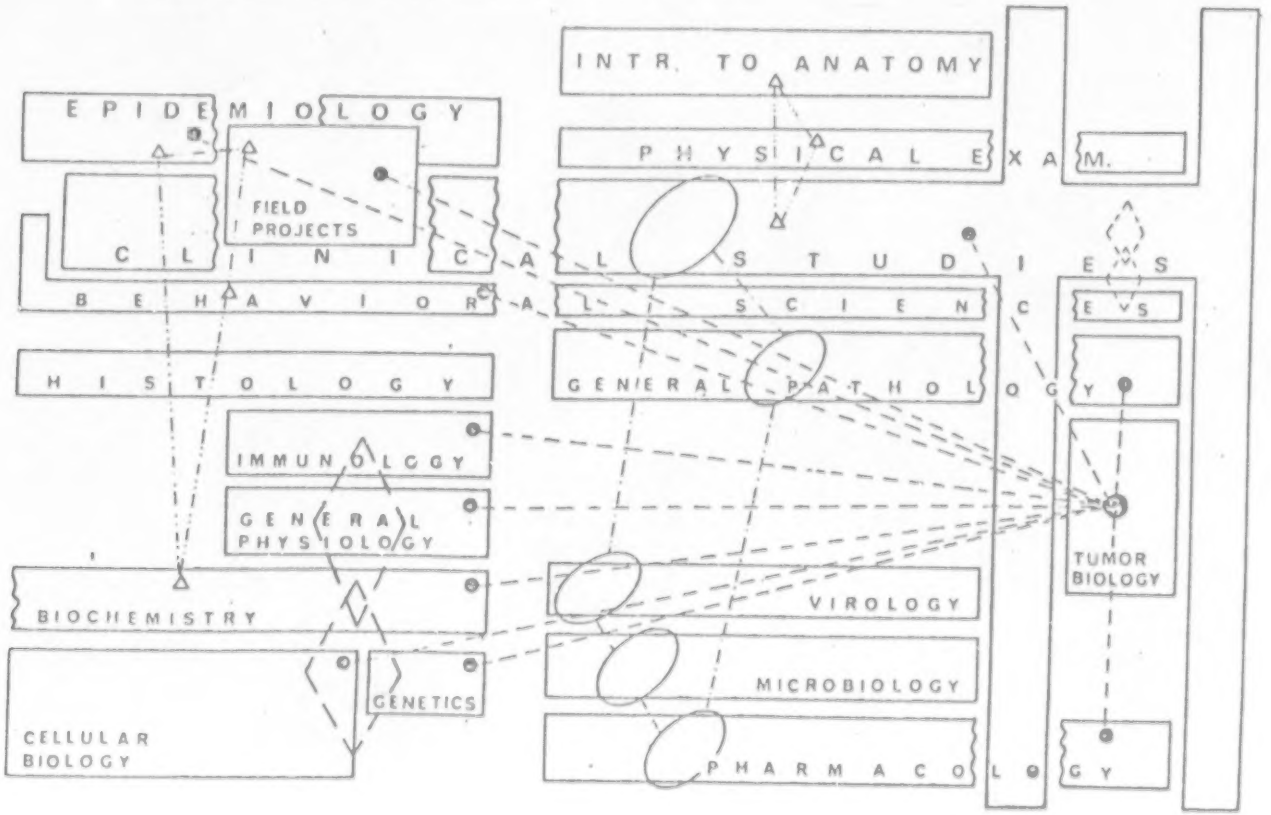
We have provided here an overview of how BGU developed educational objectives. It should be apparent from this description that the formulation of objectives, specifically at the instructional level, and the development of curricula, is a dynamic process which can best be described by the term successive approximations.

BGU is both a young and innovative institution. In its first years it grew rapidly, in terms of numbers of faculty and students. It was not always possible to recruit teachers who believed in the BGU educational philosophy. Thus the founding faculty was very rapidly outnumbered by newcomers who, given the reality of life in Israel, came from many different backgrounds. A major hazard for any new educational experience is the tendency to fall back on better known and understood traditional educational practices. In spite of this, BGU was not only able to preserve its unique curriculum and non-conventional educational approach, but has succeeded in changing the attitudes of the new members, in sustaining a critical mass of "believers", and even creating a new generation of educational leaders to perpetuate its idea.

B. G. U.
MEDICAL CURRICULUM



Second year Curriculum. The various symbols indicate various modes of interpretation or coordination between courses



APPENDIX III

A Unit of Instruction
(from Biochemistry, 2nd year)

INSTRUCTION UNIT No. 1

SUBJECT: Introduction (Nutrition)

A. Subjects of Instruction:

1. The variety of biological molecules: operational definitions of protein, lipid, carbohydrates, nuclear acids.

2. Characteristic structures, and a survey of the function and location, of the above substances.

3. The need for food as a source of energy; physiological caloric values of food.

4. The need for food as a source of essential building blocks; limitations in the synthesis of one substance from another (vitamins and trace elements will be mentioned briefly).

5. Amino acids that comprise protein, acids, essential amino acids.

B. PREREQUISITES

Combustion energy, calories
Basic organic chemistry
Knowledge of eukaryotic cell organs and their functions.

C. READING MATERIAL AND AIDS

The major text in this course is: Lehninger, A. Biochemistry. New York, Worth, 1975.

For this unit material will be provided from:

1. Montgomery, R. et al. Biochemistry; a case-oriented approach. St. Louis, MO, Mosby, 1974, pp.5-16.

2. Rose, W.C., Haines, W.J., & Johnson, J.E. "The role of the amino acids in human nutrition". Journal of. Biological Chemistry, 150: 683-684 (1943).

D. INSTRUCTIONAL ACTIVITIES

1. Lecture/discussion - one hour
2. Exercise - two hours

E. KEY WORDS

1. Protein, amino acid, essential amino acid
2. Lipid, fat, fatty acid
3. Vitamin, trace element
4. Sugar, carbohydrate
5. Nucleic acid, RNA, DNA
6. Physiological caloric value
7. Nitrogen balance
8. The names of the amino acids

F. QUESTIONS

F.1 Factual questions

1.1 Define: lipid, fatty acid
1.2 Define: essential amino acid
1.3 What is the caloric value of a gram of carbohydrate? of a gram of lipid? Why is there a difference between these values?
1.4 Define: vitamin
1.5 List at least three essential amino acids. List three non-essential amino acids

F.2 Application questions

2.1 In a diet deplete of methionine there is a negative nitrogen balance. Explain.
2.2 Describe a reasonable experiment designed to determine if Histidine is really an essential amino acid for human beings.
2.3 Two medical students participated in an experiment in which all the urea that they excreted during a four-day period was measured. The first student fasted while the second ate only 100 grams of glucose per day. The first excreted approximately twice the amount of urea as the second during the experimental period. Explain.
2.4 The amount of phenylalanine necessary for the growth of a white rat decreases if the amount of tyrosine in the food is increased. Explain.
2.5 It is assumed today that the substance Tocopherol is an essential vitamin for humans (it is also known as Vitamin E), despite the fact that no disease or negative clinical phenomenon in man is known as a result of lack of this vitamin. Is this assumption logical?
2.6 In the article by Rose et al, a diet is described which was given to two men in an attempt to determine which amino acids are essential for human beings. Which vitamins do you believe were supplied and in which component of the above-mentioned diet?
2.7 Lack of which of the following amino acids would you expect to cause a negative nitrogen balance? Lysine, methionine, valine, glutamine, aspartate, tryptophan, phenylalanine, glycine, threosine. Explain.

F.3 Problem-solving

3.1 Young rats which an average weight of 50 grams were maintained on different diets, all of which provided a total of 10grams per day. The composition of Diet A is given in the table (% - g/100 g food)

Leucine	0.8%	Purified Starch	82%
Lysine	1.2%	Butter Fat	6.0%
Methionine	0.4%	Ash (from milk)	5.0%
Phenylalanine	1.1%	Vitamins (from yeast)	0.6%
Threonine	0.5%	Arginine	0.2%
Tryptophan	0.2%	Histidine	0.4%
Valine	1.1%	Isoleucine	0.5%

In Diet B, 3% glutamic acid was added and the starch was reduced to 79%.
In Diet C, 1.2% glutamic acid was added instead of lysine.
After 10 days the average weight of the rats on Diet A was 68 grams, and the weight of the rats on Diet B was 102 grams. About 70% of the rats on Diet C died before the tenth day of the experiment, and those that stayed alive weighed an average of 22 grams. Explain what can be concluded as to the amounts of amino acids needed for normal development of rats.

3.2 Children suffering from a rare hereditary disease lack sufficient activity of the enzyme responsible for catabolism (breakdown) of the amino acid phenylalanine in its regular pathway. As a result of this there is an accumulation of phenylalanine, and its breakdown products form a secondary pathway in the baby's blood which damages its developing brain. The disease can be discovered by finding these products in the affected baby's urine and the baby can be saved from brain damage by the provision of a semi-synthetic diet which is poor in phenylalanine. Suggest a way to determine the amount of phenylalanine which is desirable in the patient's diet.

6

RECOMMENDATIONS

It is difficult to make recommendations based upon the findings of this survey. The small percentage of responses to the questionnaire make it difficult to generalize the findings to the population of medical and nursing schools. Then, too, some of the questions were not always clear to all of the respondents. Finally, as the survey progressed, it became clear that some much broader implications than originally expected were emerging.

Keeping in mind, then, the limitations of this survey, the following recommendations are submitted for review.

1. Schools should try to achieve more community involvement in the formulation of the professional profile of future physicians and nurses.

One thing was made very clear: schools responding to the survey indicated the lack of consultation with representatives of the consumers of health care. Only 10% of either medical or nursing schools reported any involvement by consumers' representatives (i.e., patients). The case studies illustrate such involvement and how it contributes to the curriculum-planning efforts of the schools.

2. Schools should involve students more in the formulation of learning objectives.

Again, this survey shows that only 52% of the medical schools who defined general learning objectives and only 36% of the nursing schools reported involvement of students in the development of objectives. The case studies show the contrary, and Newcastle even discussed "phasing out" the provision of statements of learning objectives for students as they learn to state their own.

3. Schools should involve practitioners in the formulation of learning objectives.

The data from the survey show that only 50% of the nursing schools and 48% of the medical schools reported participation by practitioners. On the other hand, the case studies provide ample illustration of the benefits of such participation. Furthermore, since learning objectives are determined partly by the "professional profile" of the health practitioner, surely that source of information needs to be tapped.

4. Schools should become much more sensitive to the possible bias of "narrow specialty" and/or "narrow discipline" interest groups.

Responses to the survey suggest that the respondents are apparently unaware that they have an enormous potential problem. More than 90% of the nursing schools and more than 80% of the medical schools report that there was "no bias present" when asked what steps they had taken to meet any possible bias on the part of narrow specialty or narrow discipline interest groups. Yet it is commonly accepted that departments are generally self-serving and that departmental objectives are almost invariably teaching objectives that ensure coverage of the discipline. (Indeed, George Miller once referred to departments in American medical schools as "semi-autonomous fiefdoms, each with far more power than the dean".) While a departmental structure may be necessary in some schools for administrative purposes, it is certainly so for research purposes, and care must be taken that the narrow interests of departments (or disciplines) do not hinder the development of learning objectives based upon sound task analysis.

5. Schools should make sure that each objective describe or be closely related to a professional competence.

While 62% of both the nursing and medical schools reported that their objectives at institutional level did meet this crite-

rion, later inspection of learning objectives which were submitted revealed that such was not the case. Many objectives in any given school did not describe expected professional competence on the part of a graduate. It is not sufficient for some of the learning objectives to do so; the criteria clearly state that each and every one must.

6. Schools should revise learning objectives so that all of them are learner-oriented.

This is particularly appropriate in the case of intellectual and communication skills. The survey showed a low percentage of medical schools, and an even lower percentage of nursing schools, which reported that their statements of objectives did specify how learners were expected to demonstrate an achievement of intellectual and communication skills. A review of the sample statements of learning objectives, however, revealed an even lower percentage.

7. Schools should ensure that the objectives are presented to all students and that they discuss them as well.

The survey shows that 81% of both nursing and medical schools report a distribution of statements of objectives to students. However, only 69% of the nursing schools and 38% of the medical schools report that students have discussed them. There is an increasing body of data in the literature showing that students who demonstrate an understanding of the objectives by discussing them learn more efficiently and effectively. As if that is not sufficient reason to make such a recommendation, the Ben Gurion and Newcastle case studies make a clear and compelling case for doing so.

8. Schools - and particularly schools of medicine - should provide for ample faculty discussion of learning objectives.

While 86% of the nursing schools report that faculty have seen the learning objectives, still only 74% report that faculty have discussed them. All faculty should engage in discussions - preferably throughout the whole process of developing the objectives - prior to final adoption and implementation. The picture is starker with regard to medical schools since 57% of these reported that faculty had seen them, but only 52% reported that they had been discussed. Contrast that with the extensive participation by all faculty in the development and implementation phases in all five of the schools discussed in the case studies - particularly the two innovative schools : Ben Gurion and Newcastle.

9. Schools should consider using a departmental structure based on discipline and/or specialty only for administrative or research purposes and ensure that faculty participate in educational planning as individual members of the faculty and not as representatives of a department, discipline, or specialty.

The case studies of Newcastle and Ben Gurion show that full faculty participation was sought and obtained. The results, from general objectives through specific learning objectives to ultimate implementation in learning activities and evaluation, represent a model of the educational process and its outcome. Narrow discipline or specialty interests were minimized, sometimes even eliminated, as faculty discussed all issues from the viewpoint of what a student needs to be able to do to become a competent health practitioner at each stage of the learning process. Any faculty member - regardless of his/her discipline - could remind the planning group which knowledge, for example, in biochemistry or physiology, would be needed for that particular learning activity, and then join the discussion of how to build it into the learning activity.

10. Schools should avoid the process of stating objectives only for the sake of stating objectives.

All five case studies describe how competently stated objectives can be beneficial to students, to faculty, and to society. In all cases the objectives are truly used to guide the planning of learning activities, to determine evaluation procedures, and to review programme achievement. They are never an end in itself.

11. Schools wanting to emulate a "model" school programme should always adapt such a programme to local needs and conditions and not simply adopt such a programme outright.

The five case studies contain rich illustrations of the consideration given to local health needs, a first priority in their educational planning. In the case of Ben Gurion, the definition of health needs is specifically "local", i.e., those of the people living in the Negev region. The statement of learning objectives reflects this priority - as any good statement of learning objectives should.

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